

**LONG-TERM GROUNDWATER MONITORING REPORT
THIRTEENTH ROUND (March 2011)**

**BLACKWELL FOREST PRESERVE LANDFILL SITE
DUPAGE COUNTY, ILLINOIS**

MWH File No.: 1007333

Prepared For:

**Forest Preserve District
DuPage County, Illinois**

Prepared By:



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June 2011

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THIRTEENTH ROUND (March 2011)**

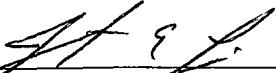
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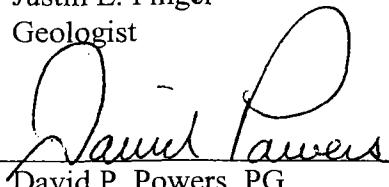
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DuPage County, Illinois**

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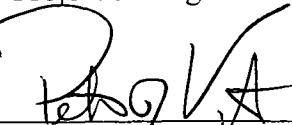
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ACRONYMS AND ABBREVIATIONS

District	Forest Preserve District of DuPage County
FS	Feasibility Study
IEPA	Illinois Environmental Protection Agency
MCLs	Maximum Contaminant Levels
MWH	MWH Americas, Inc.
NPL	National Priorities List
ORP	Oxidation-Reduction Potential
PCE	Tetrachloroethene
QAPP	Quality Assurance Project Plan
QC	Quality Control
Regulatory Standards	U.S. EPA MCLs and IEPA Class I Groundwater Standards
RI	Remedial Investigation
Site	Blackwell Landfill NPL Site
TCL	Target Compound List
µg/L	Micrograms per liter
U.S. EPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

A total of 24 groundwater monitoring events have been conducted at the Blackwell Landfill National Priorities List (NPL) Site (Site). This report documents the results of the 13th round of groundwater monitoring conducted under the Long-Term Groundwater Monitoring Program at the Site. The Long-Term Groundwater Monitoring Program began in March 2001. Prior to March 2001, 11 groundwater monitoring events were conducted at the Site as part of the Remedial Investigation (RS), Feasibility Study (FS), and Quarterly Groundwater Monitoring Program. The Site is located within the Blackwell Forest Preserve in Warrenville, DuPage County, Illinois (Figure 1). General site features are shown in Figure 2.

2.0 SCOPE OF MONITORING PROGRAM

The Forest Preserve District of DuPage County (District) has performed 24 total groundwater sampling events at the Site over the past 20 years. Two rounds of sampling were conducted during the RI in 1991 and 1992, and another round was conducted during the FS in 1995. Since 1997, a total of 21 rounds of groundwater monitoring have taken place at the Site. Eight sampling events were conducted under the Quarterly Groundwater Monitoring Program between 1997 and 2000. Thirteen additional rounds of groundwater monitoring have been conducted under the Long-Term Groundwater Monitoring Program between March 2001 and March 2011.

The original Monitoring Plan (Montgomery Watson, 2001) consisted of five rounds of monitoring between March 2001 and March 2004. Following the fifth sampling event, MWH Americas, Inc. (MWH) and the District evaluated the groundwater results and recommended extending the groundwater monitoring program for three additional rounds. As outlined in the *Revised Long-Term Groundwater Monitoring Program Summary Report* (MWH, February 2005), three additional rounds of groundwater monitoring were conducted between March 2005 and September 2006. In the *Long-Term Groundwater Monitoring Report, Eighth Round* (MWH, December 2006), MWH and the District recommended three additional rounds of groundwater sampling, each one to be conducted during the spring, beginning in 2007. These additional rounds were conducted in March 2007, March 2008, and March 2009. Following the March 2009 sampling event, the District voluntarily proposed to extend the groundwater monitoring program for three additional rounds. However, MWH and the District recommended modifying the current groundwater monitoring program to reduce the number of wells sampled. In addition, it was recommended that groundwater samples only be analyzed for volatile organic compounds (VOCs). Complete details of the modified groundwater monitoring program can be found in the *Long-Term Groundwater Monitoring Report, Eleventh Round* (MWH, June 2009).

The groundwater sampling that is the subject of this report was conducted during March 2011, and is the second of the three additional proposed sampling events. The table below is a summary of the completed and planned sampling events for the Site.

Round	Date	Event Number
Remedial Investigation		
First Round	Sep 1991	-
Second Round	Jan 1992	-
Feasibility Study		
First Round	Jun 1995	-
Quarterly Groundwater Monitoring Program		
First Round	Nov 1997	1
Second Round	Jul 1998	2
Third Round	Oct 1998	3
Fourth Round	Feb 1999	4
Round	Date	Event Number
Fifth Round	May 1999	5
Sixth Round	Aug 1999	6
Seventh Round	Nov 1999	7
Eighth Round	Feb 2000	8
Long-Term Groundwater Monitoring Program		
First Round	Mar 2001	9
Second Round	Dec 2001	10
Third Round	Sep 2002	11
Fourth Round	Jun 2003	12
Fifth Round	Mar 2004	13
Sixth Round	Mar 2005	14
Seventh Round	Dec 2005	15
Eighth Round	Sep 2006	16
Ninth Round	Mar 2007	17
Tenth Round	Mar 2008	18
Eleventh Round	Mar 2009	19
Twelfth Round	Mar 2010	20
Thirteenth Round	Mar 2011	21
Fourteenth Round	Planned Mar 2012	22

The purpose of the monitoring program is to:

- Monitor contaminant levels in groundwater to confirm that they are not increasing to a level that could jeopardize either human health or the environment;
- Evaluate the effectiveness of the treatment/containment components on the landfill;
- Detect changes in the chemical composition of groundwater at and adjacent to the Site; and
- Demonstrate natural attenuation continues to be an effective remedial strategy for impacted groundwater.

The current monitoring program consists of collecting groundwater level measurements at 26 monitoring wells, surveying surface water elevations at seven locations, groundwater sampling at four upper aquifer wells (G117, G118S, G126, and G127), and laboratory analysis of the samples. In addition, one bedrock aquifer well, G138, will continue to be sampled in order to monitor any potential migration of VOCs into the bedrock aquifer.

Groundwater samples collected from monitoring wells were previously analyzed for VOCs on the Target Compound List (TCL), phenol, and water quality parameters (i.e., chloride, sulfate and total dissolved solids). As outlined in the *Long-Term Groundwater Monitoring Report, Eleventh Round* (MWH, June 2009), the current modified monitoring plan requires groundwater samples to be analyzed for VOCs only. Upon completion of the three rounds of sampling in 2010, 2011, and 2012 under the current monitoring plan, MWH and the District will evaluate the sampling results and make recommendations whether or not to continue the groundwater monitoring program. If the monitoring plan is continued, additional modifications may be recommended at that time.

3.0 SUMMARY OF FIELD ACTIVITIES

3.1 GROUNDWATER SAMPLING

Groundwater samples were collected from five monitoring wells on March 17 and March 18, 2011. The samples were collected in accordance with procedures described in the United States Environmental Protection Agency (U.S. EPA) approved *Revised Pre-Design Investigation Activities Report, Appendix F* (Montgomery Watson, July 1997) and all subsequent and approved addenda. The samples were analyzed and validated in accordance with the *Quality Assurance Project Plan* (QAPP), [Volume IV of the *Pre-Design Investigation Activities Report* (Montgomery Watson, August 1996)]. The sampling sequence and procedures are summarized below:

- Static water levels were measured at 26 monitoring locations (Table 1) on March 17, 2011.
- Water elevations of nearby surface water bodies (i.e., Silver Lake, Pine Lake, Sand Pond, three locations along Spring Brook and one location on the west branch of the DuPage River) were measured by a licensed surveyor on March 17, 2011. The measurements and calculated water levels are included in Table 1.
- Groundwater samples were collected at five monitoring wells. The monitoring wells were purged with a decontaminated, submersible pump using low-flow methods. Dedicated tubing was used in each well. Wells were purged until field parameters (i.e., pH, specific conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential [ORP]) stabilized. Results of the stabilized field parameters are listed in Table 2.
- Laboratory provided sample bottles were filled from the discharge tubing following stabilization.
- Quality control (QC) samples (e.g., duplicates, field blanks, and matrix spike/matrix spike duplicates) were collected at frequencies specified in the QAPP.
- Following collection, the samples were placed in coolers packed with ice. The samples were delivered under chain-of-custody to First Environmental Laboratories, Inc. in Naperville, Illinois for analysis.

3.2 ANALYTICAL RESULTS

The groundwater samples were analyzed for TCL VOCs. All samples were analyzed in accordance with the analytical methods and required practical quantitation limits outlined in the QAPP and in the QAPP addenda. The laboratory-supplied data package (Appendix A) was reviewed and validated by MWH in accordance with the QAPP and U.S. EPA guidance. The validation report is included in Appendix B.

The validated analytical results from the March 2011 sampling event are summarized in Table 3. The U.S. EPA's Maximum Contaminant Levels (MCLs) and Illinois Environmental Protection Agency (IEPA) Class I Groundwater Standards (i.e., "regulatory standards") are also listed in Table 3. A summary of detected compounds and groundwater standards is provided in Table 4.

As shown in Table 3, only two VOCs were detected during the thirteenth round of long-term groundwater monitoring. Cis-1,2-dichloroethene and vinyl chloride were detected in the sample collected from monitoring well G127. Cis-1,2-dichloroethene was detected at a concentration of 7.8 micrograms per liter ($\mu\text{g}/\text{L}$), below its regulatory standard of 70 $\mu\text{g}/\text{L}$. Cis-1,2-dichloroethene was also detected in the duplicate sample collected from G127. Cis-1,2-dichloroethene was detected at G127 at a concentration of 9.0 $\mu\text{g}/\text{L}$ during the twelfth round of sampling in March 2010. Vinyl chloride was detected in groundwater samples collected from detection monitoring well G127 at 2.9 $\mu\text{g}/\text{L}$ during the March 2011 sampling event. Vinyl chloride was also detected in the duplicate sample of G127. The detection of vinyl chloride in the sample from G127 exceeds the regulatory standard of 2 $\mu\text{g}/\text{L}$ for this compound.

3.3 COMPARISON TO HISTORIC ANALYTICAL RESULTS

Review of historical data and Table 4 indicates the continuation of decreasing concentration and decreasing total number of detections of the contaminants of concern with time.

- The number of VOCs detected in groundwater samples is decreasing with time.** During the first round of the RI in September 1991, a total of seven VOCs were detected in samples from nine monitoring wells. Now 20 years later, only two VOCs were detected in samples during the March 2011 event. Additionally, benzene has not been detected in groundwater during the thirteen rounds of long-term groundwater monitoring conducted since 2001. The chlorinated organic suite of compounds

[tetrachloroethene (PCE), trichloroethene (TCE), cis- and trans-1,2-dichloroethene, and vinyl chloride] are now detected less frequently and at lower concentrations. Trichloroethene and trans-1,2-dichloroethene have not been detected at any of the monitoring wells in the samples collected since 2001. PCE has been detected only once, during round six, at a low concentration (5.6 µg/L). During March 2011, only two VOCs (i.e., cis-1,2-dichloroethene and vinyl chloride) were detected in samples from monitoring well G127.

- **The concentrations of detected VOCs are also decreasing with time.** The maximum detected concentration of cis-1,2-dichloroethene was 120 µg/L during the second round of RI sampling in January 1992. Currently, the maximum detected concentration of cis-1,2-dichloroethene is 7.8 µg/L, detected at G127. The regulatory standard for cis-1,2-dichloroethene is 70 µg/L.
- **The detected concentrations of cis-1,2-dichloroethene and vinyl chloride in the outwash detection wells are decreasing with time.** For presentation purposes, a trendline analysis for the concentrations of cis-1,2-dichloroethene and vinyl chloride in monitoring wells G118S and G127 is shown in Appendix C. The detected (and non-detected) concentrations of cis-1,2-dichloroethene continue to represent a downward trend in concentration versus time.

Groundwater samples from monitoring well G127 have occasionally included detections of vinyl chloride. Vinyl chloride has been detected in the samples from G127 during five of thirteen monitoring events conducted since 2001. Previously, vinyl chloride was detected in samples from G127 during the June 2003, March 2005, March 2007, and March 2008 sampling events. Vinyl chloride was detected at a concentration of 2.9 µg/L during this sampling event.

Vinyl chloride was not detected in samples collected from G118S during the past four sampling events (March 2008, March 2009, March 2010, and March 2011). Vinyl chloride was detected in samples from this well during the first round of the RI (18.0 µg/L) in September 1991 and in March 2007 (3.1 µg/L). The concentrations of vinyl chloride in samples from G118S and G127 continue to decrease with time, as shown in trendline Drawings 1 and 2 of Appendix C. The occasional detections of vinyl chloride in samples from G127 are likely due to the biodegradation of cis-1,2-dichloroethene (during reductive dechlorination, cis-1,2-dichloroethene degrades to vinyl chloride).

The absence of VOC detections in compliance well G138 during the March 2011 sampling event continues to confirm that VOCs are not migrating off the Site. VOCs have not been detected at compliance wells during any of the thirteen rounds of the Long-Term Groundwater Monitoring Program.

3.4 GROUNDWATER LEVEL MEASUREMENTS

Surface and groundwater elevations were measured prior to groundwater sample collection on March 17, 2011. Water levels and elevations are summarized in Table 1.

3.4.1 Upper Aquifer - Glacial Outwash

A plot of the water table for the upper glacial outwash aquifer is presented in Figure 5. The approximate northern boundary of the glacial aquifer is within the southwest portion of the landfill. The direction of groundwater flow in the glacial aquifer is to the south-southwest. Groundwater flow and the relationship of surface water elevations to groundwater elevations are consistent with the groundwater flows defined in previous monitoring reports.

3.4.2 Lower Aquifer - Bedrock

The potentiometric surface for the lower aquifer is presented in Figure 6. The direction of groundwater flow is to the southwest toward the West Branch of the DuPage River. The flow direction is consistent with the groundwater flow identified in previous monitoring reports.

4.0 SUMMARY

Water level measurements collected in March 2011 indicate that the groundwater flow regime is similar to that shown by historical data. Groundwater in the upper aquifer near the landfill flows to the south and southwest towards the West Branch of the DuPage River. Groundwater flow in the lower aquifer is to the southwest, also toward the West Branch of the DuPage River.

Four upper aquifer wells and one lower aquifer well were sampled in March 2011. The results of laboratory analysis indicated that only two VOCs were detected in the samples collected from the monitoring wells. Cis-1,2-dichloroethene was detected in the sample collected from G127 at a concentration of 7.8 µg/L which is significantly below the regulatory standard of 70 µg/L. One VOC, vinyl chloride, was also detected in the sample collected from G127 at a concentration above the U.S. EPA MCL and IEPA Class I Groundwater Standard for this compound. Vinyl chloride has occasionally been detected at G127. The vinyl chloride detection is below historic concentrations at this well and the concentration trendline for this compound is decreasing with time. These results continue to show evidence of decreasing trends in both the number of VOC analytes detected and the concentrations of VOCs. The absence of VOC detections in compliance well G138 during the March 2011 sampling event continues to confirm that impacted groundwater is not migrating off the Site. VOCs have not been detected at compliance wells during any of the thirteen rounds of the Long-Term Groundwater Monitoring program.

5.0 RECOMMENDATIONS

There is strong and consistent evidence that the combined remedy, which includes landfill containment/treatment systems and natural attenuation in groundwater, are protective of human health and environment.

As outlined in the *Long-Term Groundwater Monitoring Report, Eleventh Round* (MWH, June 2009), three rounds of annual sampling are to be conducted from 2010 through 2012. This sampling event was the second of the three proposed rounds. The final sampling round is scheduled to be conducted in 2012 in the spring when infiltration potential is highest for the landfill and so a release of a compound would be most likely.

6.0 REFERENCES

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TABLES

Table 1
Summary of Groundwater Level Measurements
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Deep Monitoring Wells (Bedrock)

Well Designation	Depth to Water (feet)	TOIC Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Notes
G128D	14.11	707.62	693.51	Detection Well
G133D	14.69	708.14	693.45	Compliance Well
G138	15.36	708.79	693.43	Compliance Well
G140D	12.17	705.81	693.64	Detection Well

Shallow Monitoring Wells (Glacial Outwash)

Well Designation	Depth to Water (feet)	TOIC Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Notes
G117	11.42	705.79	694.37	Detection Well
G118S	15.81	711.56	695.75	Detection Well
G122	12.96	706.62	693.66	Compliance Well
G126	10.69	704.61	693.92	Detection Well
G127	12.51	706.72	694.21	Detection Well
G129	8.28	702.86	694.58	Detection Well
G130	14.85	710.40	695.55	Detection Well
G147	12.23	704.86	692.63	Compliance Well

Water Level Wells

Well Designation	Depth to Water (feet)	TOIC Elevation (ft amsl)	Groundwater Elevation (ft amsl)	Notes
P2	6.84	699.32	692.48	Glacial Outwash Aquifer Well
G107S	13.68	708.60	694.92	Glacial Outwash Aquifer Well
G114	14.72	709.53	694.81	Glacial Outwash Aquifer Well
G121	10.13	703.71	693.58	Glacial Outwash Aquifer Well
G123	11.95	706.21	694.26	Glacial Outwash Aquifer Well
G133S	14.24	708.13	693.89	Glacial Outwash Aquifer Well
G142	14.88	709.25	694.37	Glacial Outwash Aquifer Well
G143	12.15	706.56	694.41	Glacial Outwash Aquifer Well
G144	6.23	701.88	695.65	Glacial Outwash Aquifer Well
G132D	24.52	725.99	701.47	Bedrock Well
G134	26.10	727.20	701.10	Bedrock Well
G135	25.11	721.07	695.96	Bedrock Well
G137	8.64	702.08	693.44	Bedrock Well
G139	8.65	702.22	693.57	Bedrock Well

Surface Water

Measurement Location	Surface Water Elevation (ft amsl)
Silver Lake	708.10
Pool West of Silver Lake	705.01
Sand Pond	693.61
Pine Lake	693.22
Spring Brook - No. 2	701.28
Spring Brook - No. 3	695.09
DuPage River	689.08

Notes:

Surface water elevations measured by Area Survey Company on March 17, 2011.

Groundwater levels measured by MWH on March 17, 2011.

ft amsl = feet above mean sea level

TOIC = Top of inner casing

Table 2
Summary of Stabilized Field Parameters
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Deep Monitoring Wells (Bedrock)

Well Number	Type of Well	pH	Specific Conductivity (S/m)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Oxidation - Reduction Potential (mV)
G138	Compliance	8.05	0.0925	0.0	3.11	12.51	119

Shallow Monitoring Wells (Glacial Outwash)

Well Number	Type of Well	pH	Specific Conductivity (S/m)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Oxidation - Reduction Potential (mV)
G117	Detection	7.50	0.0856	31.3	0.01	12.67	14
G118S	Detection	7.33	0.111	0.00	0.00	8.25	141
G126	Detection	7.44	0.123	0.4	0.37	11.54	80
G127	Detection	7.23	0.108	38.3	0.00	9.15	-46

Notes:

°C - Degrees Celsius

mg/L - Milligrams per liter

mV - Millivolts

NTU - Nephelometric turbidity units

S/m - Siemens per meter

Table 3
Validated Analytical Results
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Sample Name	U.S. EPA	IEPA	BW-GW-G117-21	BW-GW-G118S-21	BW-GW-G126-21	BW-GW-G127-21	BW-GW-G127-921	BW-GW-G138-21
Sample Date	MCL	Class I Standard	Units	03/17/11	03/18/11	03/17/11	03/18/11	03/17/11
Parameter				Conc LQ/DVQ PQL				
VOC								
Acetone		700*	ug/L	U/ 100				
Benzene	5	5	ug/L	U/ 5.0				
Bromodichloromethane	100/80 (THM)	0.02a	ug/L	U/ 1.0				
Bromoform	100/80 (THM)	0.2a	ug/L	U/ 1.0				
Bromomethane (Methyl bromide)		9.8*	ug/L	U/ 5.0				
2-Butanone (MEK)		-	ug/L	U/ 10.0				
Carbon disulfide		700*	ug/L	U/ 5.0				
Carbon tetrachloride	5	5	ug/L	U/ 5.0				
Chlorobenzene (Monochlorobenzene)	100	100	ug/L	U/ 5.0				
Chlorodibromomethane	100/80 (THM)	140*	ug/L	U/ 1.0				
Chloroethane		-	ug/L	U/ 10.0				
Chloroform	100/80 (THM)	0.02a	ug/L	U/ 1.0				
Chloromethane		-	ug/L	U/ 10.0				
1,1-Dichloroethane		700*	ug/L	U/ 5.0				
1,2-Dichloroethane	5	5	ug/L	U/ 5.0				
1,1-Dichloroethene	7	7	ug/L	U/ 5.0				
cis-1,2-Dichloroethene	70	70	ug/L	U/ 5.0	U/ 5.0	U/ 5.0	7.8 / 5.0	7.6 / 5.0
trans-1,2-Dichloroethene	100	100	ug/L	U/ 5.0				
1,2-Dichloropropane	5	5	ug/L	U/ 5.0				
cis-1,3-Dichloropropene		-	ug/L	U/ 1.0				
trans-1,3-Dichloropropene		1a (cis + trans)	ug/L	U/ 1.0				
Ethyl benzene	700	700	ug/L	U/ 5.0				
2-Hexanone (MBK)		-	ug/L	U/ 10.0				
Methyl-tert-butylether (MTBE)		70	ug/L	U/ 5.0				
4-Methyl-2-pentanone (MIBK)		-	ug/L	U/ 10.0				
Methylene chloride	5	5	ug/L	U/ 5.0				
Styrene	100	100	ug/L	U/ 5.0				
1,1,2,2-Tetrachloroethane		-	ug/L	U/ 5.0				
Tetrachloroethene	5	5	ug/L	U/ 5.0				
Toluene	1,000	1,000	ug/L	U/ 5.0				
1,1,1-Trichloroethane	200	200	ug/L	U/ 5.0				
1,1,2-Trichloroethane	5	5	ug/L	U/ 5.0				
Trichloroethene	5	5	ug/L	U/ 5.0				
Vinyl Acetate		7,000*	ug/L	U/ 10.0				
Vinyl Chloride	2	2	ug/L	U/ 2.0	U/ 2.0	U/ 2.0	2.9 / 2.0	3.0 / 2.0
Xylene, Total	10,000	10,000	ug/L	U/ 5.0				

Table 3
Validated Analytical Results
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Sample Name Sample Date Parameter	U.S. EPA MCL	IEPA Class I Standard	Units	BW-GW-FB01-21 03/17/11			BW-GW-FB02-21 03/18/11			BW-GW-TB01-21 03/17/11		
				Conc	LQ/DVQ	PQL	Conc	LQ/DVQ	PQL	Conc	LQ/DVQ	PQL
VOC												
Acetone			700*	ug/L	U/	100	U/	100		U/	100	
Benzene	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Bromodichloromethane	100/80 (THM)	0.02a	ug/L		U/	1.0	U/	1.0		U/	1.0	
Bromoform	100/80 (THM)	0.2a	ug/L		U/	1.0	U/	1.0		U/	1.0	
Bromomethane (Methyl bromide)		9.8*	ug/L		U/	5.0	U/	5.0		U/	5.0	
2-Butanone (MEK)			ug/L		U/	10.0	U/	10.0		U/	10.0	
Carbon disulfide		700*	ug/L		U/	5.0	U/	5.0		U/	5.0	
Carbon tetrachloride	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Chlorobenzene (Monochlorobenzene)	100	100	ug/L		U/	5.0	U/	5.0		U/	5.0	
Chlorodibromomethane	100/80 (THM)	140*	ug/L		U/	1.0	U/	1.0		U/	1.0	
Chloroethane			ug/L		U/	10.0	U/	10.0		U/	10.0	
Chloroform	100/80 (THM)	0.02a	ug/L		U/	1.0	U/	1.0		U/	1.0	
Chloromethane			ug/L		U/	10.0	U/	10.0		U/	10.0	
1,1-Dichloroethane		700*	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,2-Dichloroethane	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,1-Dichloroethene	7	7	ug/L		U/	5.0	U/	5.0		U/	5.0	
cis-1,2-Dichloroethene	70	70	ug/L		U/	5.0	U/	5.0		U/	5.0	
trans-1,2-Dichloroethene	100	100	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,2-Dichloropropane	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
cis-1,3-Dichloropropene			1a (cis + trans)	ug/L	U/	1.0	U/	1.0		U/	1.0	
trans-1,3-Dichloropropene				ug/L	U/	1.0	U/	1.0		U/	1.0	
Ethyl benzene	700	700	ug/L		U/	5.0	U/	5.0		U/	5.0	
2-Hexanone (MBK)			ug/L		U/	10.0	U/	10.0		U/	10.0	
Methyl-tert-butylether (MTBE)		70	ug/L		U/	5.0	U/	5.0		U/	5.0	
4-Methyl-2-pentanone (MIBK)			ug/L		U/	10.0	U/	10.0		U/	10.0	
Methylene chloride	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Styrene	100	100	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,1,2,2-Tetrachloroethane			ug/L		U/	5.0	U/	5.0		U/	5.0	
Tetrachloroethene	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Toluene	1,000	1,000	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,1,1-Trichloroethane	200	200	ug/L		U/	5.0	U/	5.0		U/	5.0	
1,1,2-Trichloroethane	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Trichloroethene	5	5	ug/L		U/	5.0	U/	5.0		U/	5.0	
Vinyl Acetate		7,000*	ug/L		U/	10.0	U/	10.0		U/	10.0	
Vinyl Chloride	2	2	ug/L		U/	2.0	U/	2.0		U/	2.0	
Xylene, Total	10,000	10,000	ug/L		U/	5.0	U/	5.0		U/	5.0	

Notes:

Conc = concentration

IEPA = Illinois Environmental Protection Agency

LQ/DVQ = Lab Qualifiers/Data Validation Qualifiers

MCL = Maximum Contaminant Level

PQL = Practical Quantitation Limit

THM = Trihalomethanes - Total for all THMs cannot exceed the 80 ug/L level

ug/L = Micrograms per liter

U.S. EPA = United States Environmental Protection Agency

VOCs = Volatile Organic Compounds

* not listed as standard in 620.410:

a - Health Advisory Conc. equal to Acceptable Detection Limit (ADL) for carcinogens

Bold = Concentration exceeds regulatory standards

Sample Label Identifiers:

FB - field blank

GW - groundwater

G117 - well identification

TB - trip blank

-21 - indicates the sampling round beginning after the completion of the Feasibility Study in 1995

921 - duplicate sample

Qualifier Definitions:

U/ - Not detected

Table 4
Summary of Detections in Monitoring Wells
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Parameter	U.S. EPA MCL	IEPA Class I Standard	Units	Outwash Detection			Bedrock Compliance		
				Detections	Range		Detections	Range	
					Min	Max		Min	Max
VOCs									
cis-1,2-Dichloroethene	70	70	ug/L	1 / 4	ND	7.8	0 / 1	ND	ND
Vinyl Chloride	2	2	ug/L	1 / 4	ND	2.9	0 / 1	ND	ND

Notes:

Bold = Concentration exceeds regulatory standards
 IEPA = Illinois Environmental Protection Agency
 MCL = Maximum Contaminant Level
 ND = Not Detected
 ug/L = Microgram per Liter
 U.S. EPA = United States Environmental Protection Agency
 VOCs = Volatile organic compounds

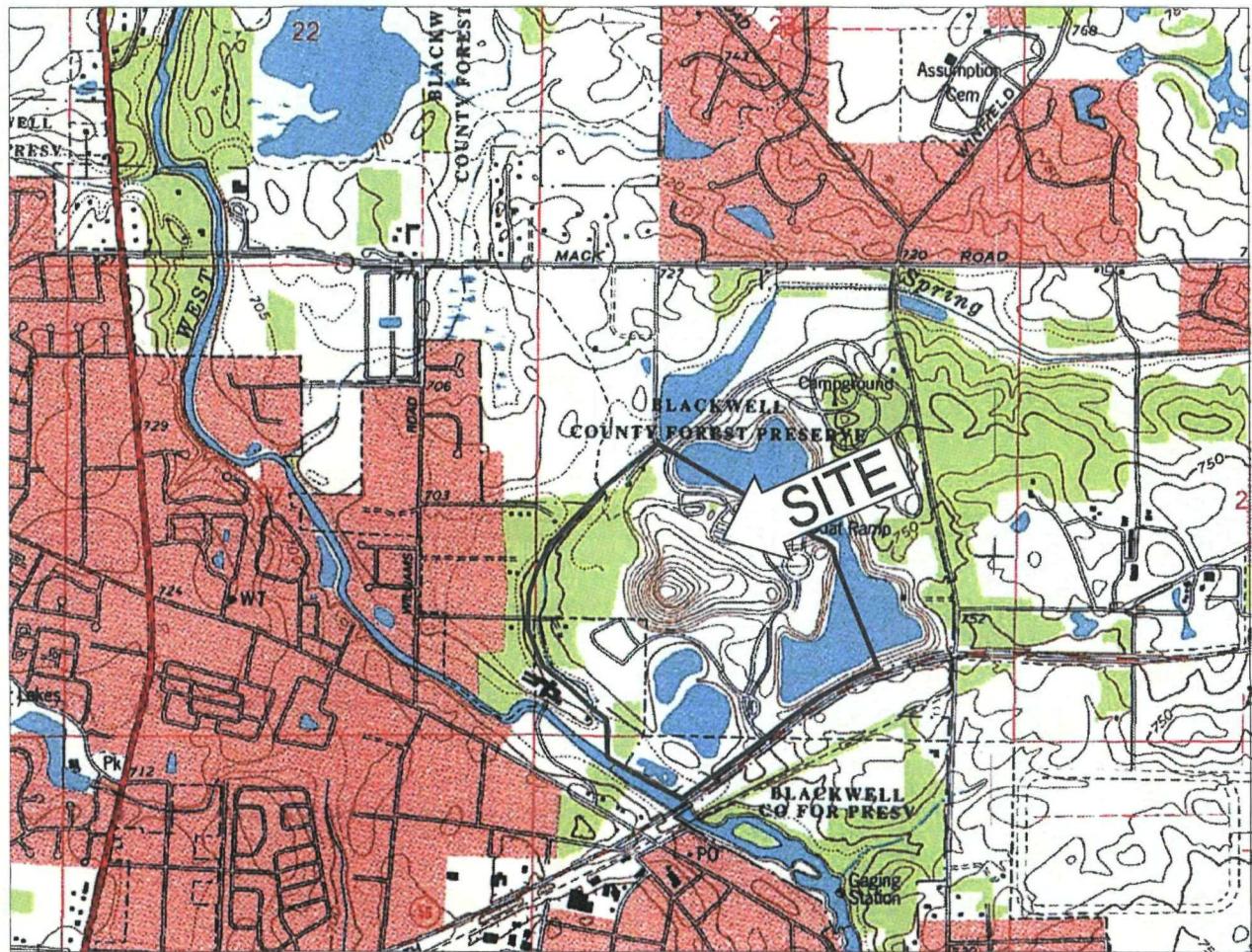
Table 4
Summary of Detections in Monitoring Wells
Long-Term Groundwater Monitoring Program - Round 13 (March 2011)
Blackwell Landfill, DuPage County, Illinois

Parameter	U.S. EPA MCL	IEPA Class I Standard	Units	Outwash Detection			Bedrock Compliance						
				Detections	Range		Detections	Range					
					Min	Max		Min	Max				
VOCs													
cis-1,2-Dichloroethene	70	70	ug/L	1 / 4	ND	7.8	0 / 1	ND	ND				
Vinyl Chloride	2	2	ug/L	1 / 4	ND	2.9	0 / 1	ND	ND				

Notes:

Bold = Concentration exceeds regulatory standards
 IEPA = Illinois Environmental Protection Agency
 MCL = Maximum Contaminant Level
 ND = Not Detected
 ug/L = Microgram per Liter
 U.S. EPA = United States Environmental Protection Agency
 VOCs = Volatile organic compounds

FIGURES



BASE MAP DEVELOPED FROM THE
NAPERVILLE, ILLINOIS 7.5 MINUTE
U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
DATED: 1993



2000

SCALE IN FEET

FIGURE

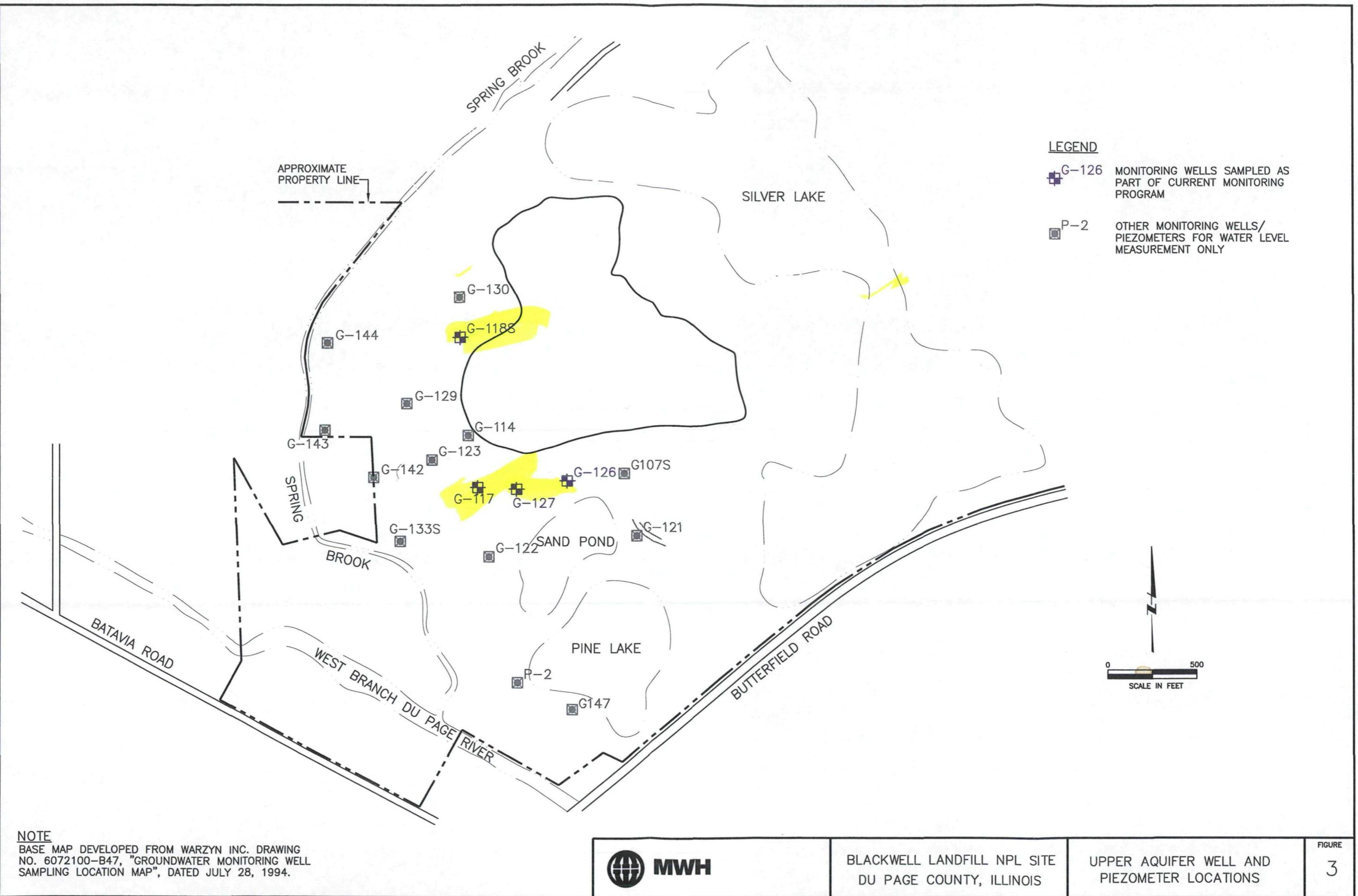
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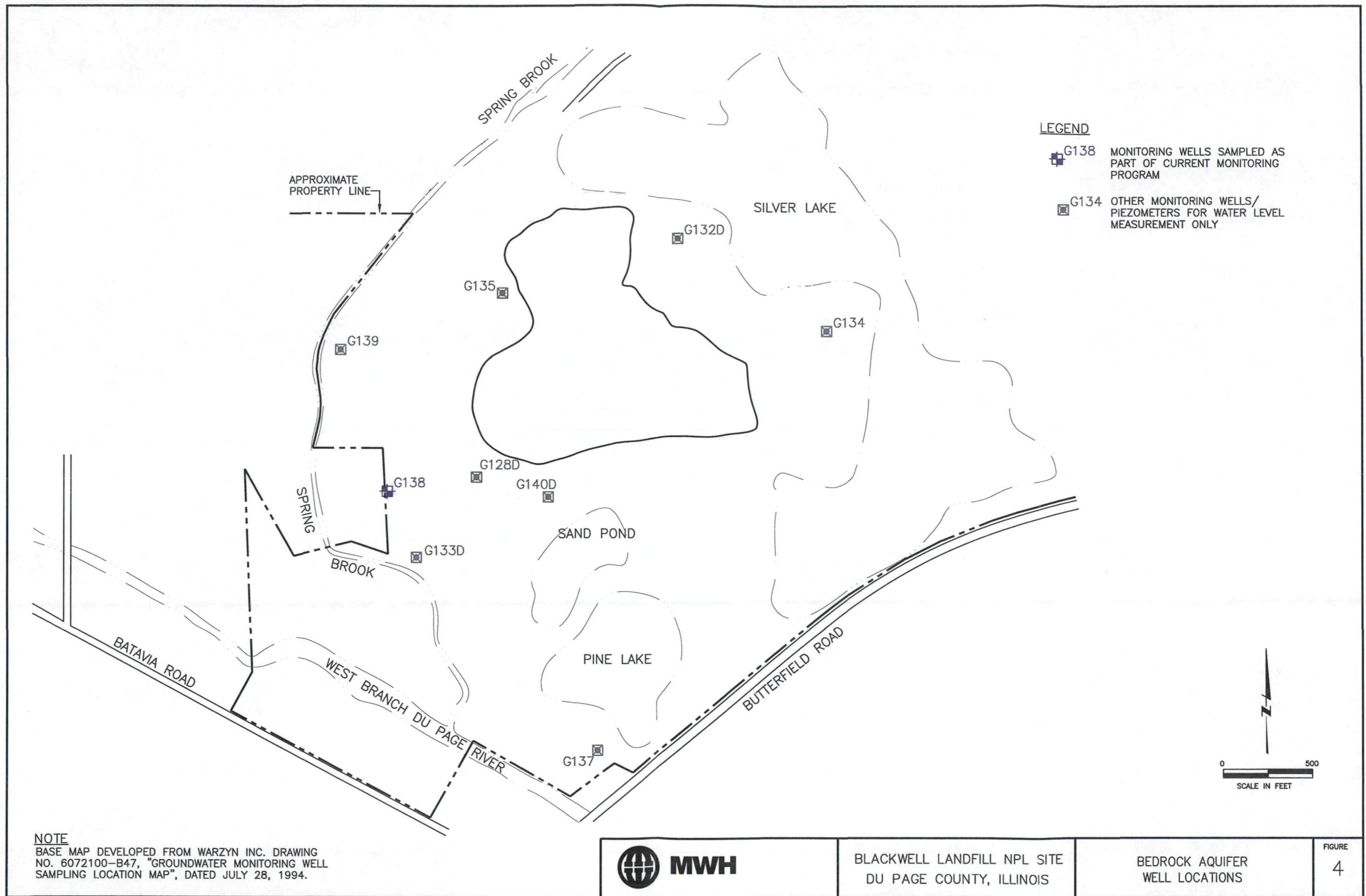


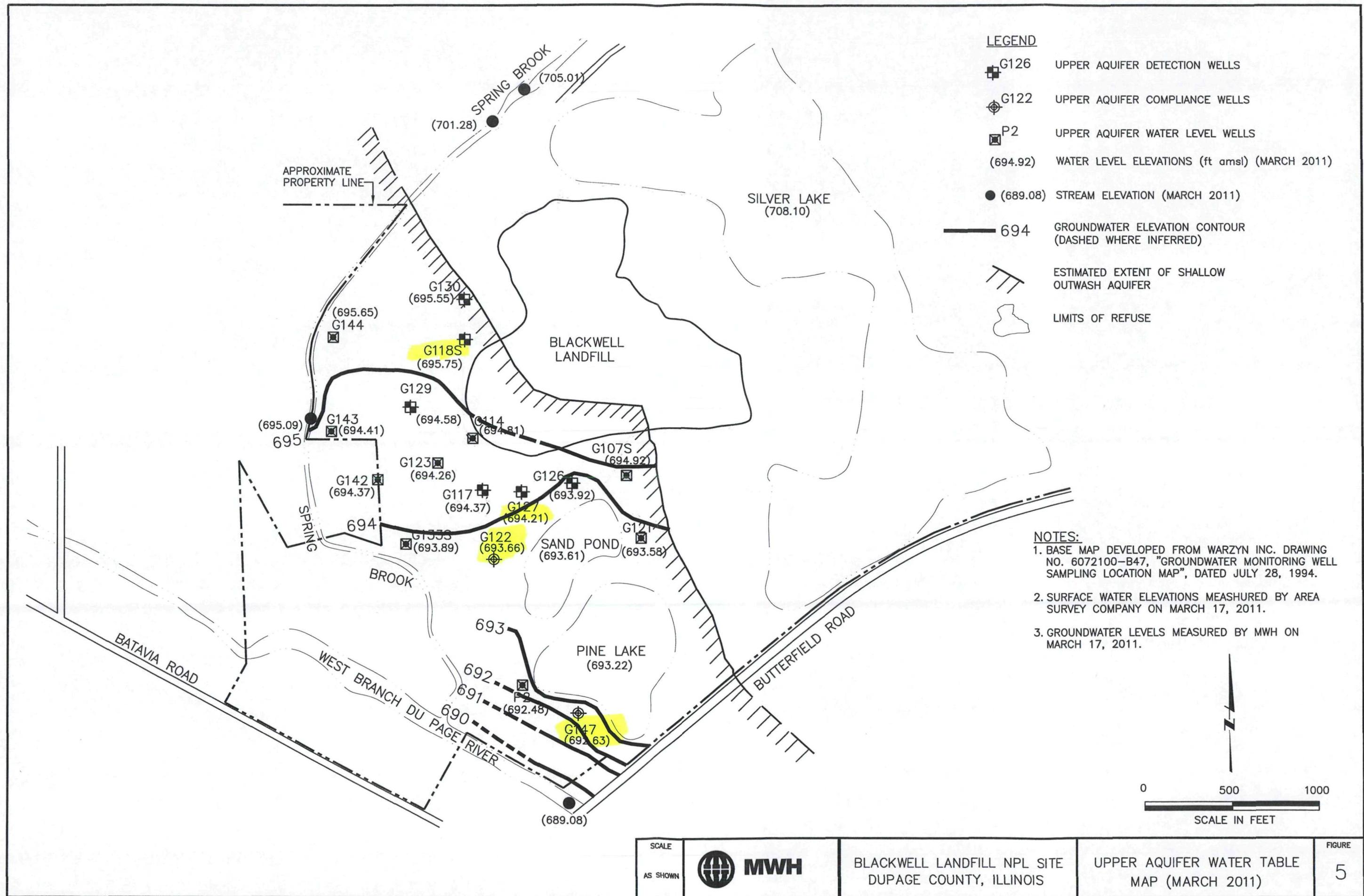
BLACKWELL LANDFILL NPL SITE
DUPAGE COUNTY, ILLINOIS

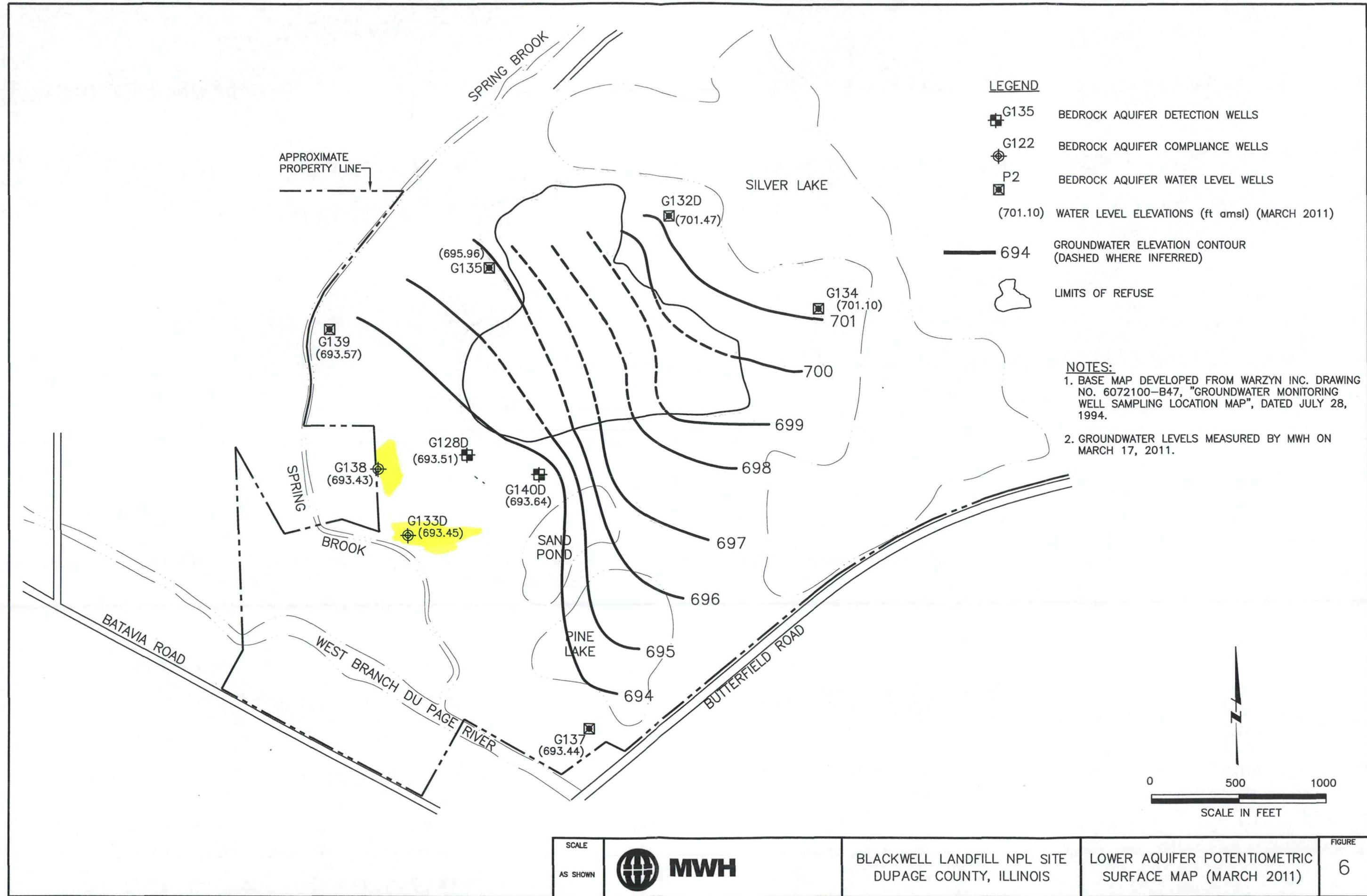
SITE LOCATION MAP











APPENDIX A

LABORATORY ANALYTICAL DATA SHEETS



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March 25, 2011

Mr. Justin Finger
MONTGOMERY WATSON HARZA
175 West Jackson Boulevard,
Suite 1900
Chicago, IL 60604

Project ID: Blackwell Groundwater #1007333.03161101
First Environmental File ID: 11-1044
Date Received: March 18, 2011

Dear Mr. Justin Finger:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number 002687: effective 03/01/2011 through 02/28/2012.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

Bill Mottashed
Project Manager



First Environmental Laboratories, Inc.

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Case Narrative

MONTGOMERY WATSON HARZA

Project ID: **Blackwell Groundwater #1007333.03161101**

First Environmental File ID: **11-1044**

Date Received: **March 18, 2011**

Flag	Description	Flag	Description
<	Analyte not detected at or above the reporting limit.	L+	LCS recovery outside control limits; high bias.
B	Analyte detected in associated method blank.	L-	LCS recovery outside control limits; low bias.
C	Identification confirmed by GC/MS.	M	MS recovery outside control limits; LCS acceptable.
D	Surrogates diluted out; recovery not available.	M+	MS recovery outside control limits high bias; LCS acceptable.
E	Estimated result; concentration exceeds calibration range.	M-	MS recovery outside control limits low bias; LCS acceptable.
F	Field measurement.	N	Analyte is not part of our NELAC accreditation.
G	Surrogate recovery outside control limits; matrix effect.	ND	Analyte was not detected using a library search routine; No calibration standard was analyzed.
H	Analysis or extraction holding time exceeded.	P	Chemical preservation pH adjusted in lab.
J	Estimated result; concentration is less than calib range.	Q	The analyte was determined by a GC/MS database search.
K	RPD outside control limits.	S	Analyte was sub-contracted to another laboratory for analysis.
RL	Routine Reporting Limit (Lowest amount that can be detected when routine weights/volumes are used without dilution.)	T	Sample temperature upon receipt exceeded 0-6°C
		W	Reporting limit elevated due to sample matrix.

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

Sample Batch Comments:

Sample acceptance criteria were met.



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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-TB01-21
Sample No: 11-1044-001

Date Collected: 03/17/11
Time Collected: 10:00
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-FB01-21
Sample No: 11-1044-002

Date Collected: 03/17/11
Time Collected: 11:20
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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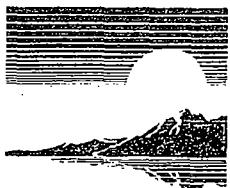
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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G117-21
Sample No: 11-1044-003

Date Collected: 03/17/11
Time Collected: 13:05
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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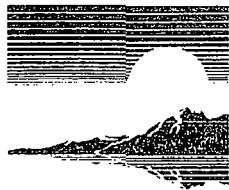
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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G138-21
Sample No: 11-1044-004

Date Collected: 03/17/11
Time Collected: 15:05
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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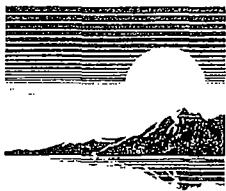
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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G126-21
Sample No: 11-1044-005

Date Collected: 03/17/11
Time Collected: 16:05
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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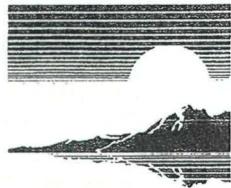
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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G118S-21
Sample No: 11-1044-006

Date Collected: 03/18/11
Time Collected: 8:20
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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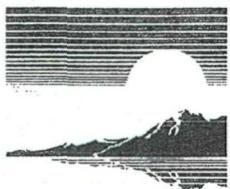
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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G127-21
Sample No: 11-1044-007

Date Collected: 03/18/11
Time Collected: 10:05
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	7.8	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	2.9	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-G127-921
Sample No: 11-1044-008

Date Collected: 03/18/11
Time Collected: 10:10
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	7.6	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	3.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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Analytical Report

Client: MONTGOMERY WATSON HARZA
Project ID: Blackwell Groundwater #1007333.0316110
Sample ID: BW-GW-FB02-21
Sample No: 11-1044-009

Date Collected: 03/18/11
Time Collected: 10:50
Date Received: 03/18/11
Date Reported: 03/25/11

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds		Method: 5030B/8260B		
Analysis Date: 03/24/11				
Acetone	< 100	100	ug/L	
Benzene	< 5.0	5.0	ug/L	
Bromodichloromethane	< 1.0	1.0	ug/L	
Bromoform	< 1.0	1.0	ug/L	
Bromomethane	< 5.0	5.0	ug/L	
2-Butanone (MEK)	< 10.0	10.0	ug/L	
Carbon disulfide	< 5.0	5.0	ug/L	
Carbon tetrachloride	< 5.0	5.0	ug/L	
Chlorobenzene	< 5.0	5.0	ug/L	
Chlorodibromomethane	< 1.0	1.0	ug/L	
Chloroethane	< 10.0	10.0	ug/L	
Chloroform	< 1.0	1.0	ug/L	
Chloromethane	< 10.0	10.0	ug/L	
1,1-Dichloroethane	< 5.0	5.0	ug/L	
1,2-Dichloroethane	< 5.0	5.0	ug/L	
1,1-Dichloroethene	< 5.0	5.0	ug/L	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/L	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/L	
1,2-Dichloropropane	< 5.0	5.0	ug/L	
cis-1,3-Dichloropropene	< 1.0	1.0	ug/L	
trans-1,3-Dichloropropene	< 1.0	1.0	ug/L	
Ethylbenzene	< 5.0	5.0	ug/L	
2-Hexanone	< 10.0	10.0	ug/L	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/L	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/L	
Methylene chloride	< 5.0	5.0	ug/L	
Styrene	< 5.0	5.0	ug/L	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/L	
Tetrachloroethene	< 5.0	5.0	ug/L	
Toluene	< 5.0	5.0	ug/L	
1,1,1-Trichloroethane	< 5.0	5.0	ug/L	
1,1,2-Trichloroethane	< 5.0	5.0	ug/L	
Trichloroethene	< 5.0	5.0	ug/L	
Vinyl acetate	< 10.0	10.0	ug/L	
Vinyl chloride	< 2.0	2.0	ug/L	
Xylene, Total	< 5.0	5.0	ug/L	



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CHART OF CUSTODIAN RECORDS

Page ____ of ____ pgs

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1600 Shore Road, Suite D
Naperville, Illinois 60563
Phone: (630) 778-1200 • Fax: (630) 778-1233
E-mail: firstinfo@firstenv.com
IEPA Certification #100292

Company Name: **MWH**
Street Address: **175 W. JACKSON BLVD, SUITE 1900**
City: **CHICAGO** State: **IL** Zip: **60604**
Phone: **(312) 831-3000** Fax: **(312) 831-3999** e-mail: **JUSTIN.E.FINGER@MWH.COM**
Send Report To: **JUSTIN FINGER** Via: Fax e-mail
Sampled By: **JUSTIN FINGER, TIM CARROLL**

Project I.D.: BLACKWELL GROUNDWATER
P.O. #: 1007333.03161101

Matrix Codes: S = Soil W = Water O = Other

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6°C Yes No °C
Received within 6 hrs. of collection: _____
Ice Present: Yes No

Sample Refrigerated: Yes No
Refrigerator Temperature: _____ °C
5035 Vials Frozen: Yes No
Freezer Temperature: _____ °C

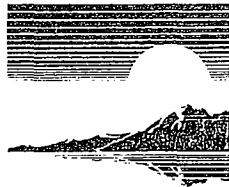
Containers Received Preserved: Yes No

Need to meet: IL TACO IN BISC

Notes and Special Instructions:

Relinquished By: J. E. F.
Relinquished By: _____
Rev. 9/08

Date/Time 3/18/11 1145 Received By: J. G. Date/Time 3/18/11 1145
Date/Time Received By: Date/Time



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April 15, 2011

Mr. Justin Finger
MONTGOMERY WATSON HARZA
175 West Jackson Boulevard,
Suite 1900
Chicago, IL 60604

Dear Mr. Justin Finger:

The following data package includes the supporting quality control information for the following referenced project.

All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number 002687: effective 03/01/2011 through 02/28/2012.

Project ID: **Blackwell Groundwater #1007333.03161101**

First Environmental File ID: **11-1044**

Date Received: **March 18, 2011**

Volatile Organic Compounds

All analyses were performed within established holding times, and all quality control criteria, as outlined in the methods, have been met except as noted here or noted on the submitted QC forms.

Reviewed By: _____

Lorrie Franklin (QAO)

Date: _____

04/15/11

Sample List for Group:**VOA_Mar_24_2011**

Printing Date

Apr-14-2011

Lab File ID	EPA SAMPLE NO.	Lab Sample ID	Date Acq.	Date Rec.	Date Due
F91648.D	VTUN01	VTUN01	3/24/2011 8:57	3/18/2011	
F91650.D	VSTD050	VSTD050	3/24/2011 9:33	3/18/2011	
F91651.D	LCS050	LCS050	3/24/2011 9:49	3/18/2011	
F91652.D	G138-21MS	11-1044-004MS	3/24/2011 10:05	3/18/2011	
F91653.D	LCSD050	LCSD050	3/24/2011 10:21	3/18/2011	
F91654.D	G138-21MSD	11-1044-004MSD	3/24/2011 10:37	3/18/2011	
F91658.D	VBLK01	VBLKW04	3/24/2011 11:41	3/18/2011	
F91660.D	G138-21	11-1044-004	3/24/2011 12:13	3/18/2011	
F91662.D	FB02-21	11-1044-009	3/24/2011 12:45	3/18/2011	
F91664.D	FB01-21	11-1044-002	3/24/2011 13:17	3/18/2011	
F91666.D	TB01-21	11-1044-001	3/24/2011 13:49	3/18/2011	
F91668.D	G117-21	11-1044-003	3/24/2011 14:21	3/18/2011	
F91670.D	G126-21	11-1044-005	3/24/2011 14:53	3/18/2011	
F91672.D	G118S-21	11-1044-006	3/24/2011 15:24	3/18/2011	
F91674.D	G127-21	11-1044-007	3/24/2011 15:56	3/18/2011	
F91676.D	G127-921	11-1044-008	3/24/2011 16:28	3/18/2011	

2A
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: FIRST ENVIRONMENTAL LABS Contract: MWH
 Lab Code: FEL Case No.: BLACKW SAS No.: SDG No.:

	EPA SAMPLE NO.	SMC1 #	SMC2 #	SMC3 #	TOT OUT
01	LCS050	100	99	103	0
02	G138-21MS	103	99	102	0
03	LCSD050	103	99	105	0
04	G138-21MSD	106	97	101	0
05	VBLK01	109	97	100	0
06	G138-21	108	99	99	0
07	FB02-21	108	98	100	0
08	FB01-21	109	98	100	0
09	TB01-21	111	99	101	0
10	G117-21	111	99	99	0
11	G126-21	107	97	97	0
12	G118S-21	105	99	97	0
13	G127-21	106	97	98	0
14	G127-921	105	97	99	0

QC LIMITS

SMC1	=	Dibromofluoromethane	(75-128)
SMC2	=	d8-Toluene	(90-112)
SMC3	=	4-Bromofluorobenzene	(72-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

3 Spike Recovery and RPD Summary Report - WATER

Method Path : C:\msdchem\1\METHODS\
Method File : F_8260BB.M
Title : Volatile Organic Analysis; Method 8260 Aqueous
Last Update : Thu Mar 17 13:58:45 2011
Response Via : Initial Calibration

Datafile Path: C:\DATA\2011\1103\110324\

-----Sample-----

File : F91660.D Name : 11-1044-004 MWHARZ Acq Time: 24 Mar 2011 12:13 pm

-----Spike-----

File : F91652.D
Name : 11-1044-004MS MWHARZ 50uL #14253/50mL Acq Time: 24 Mar 2011 10:05 am

--Spike Duplicate--

File : F91654.D
Name : 11-1044-004MSD MW H ARZ 50uL #14253/50mL . Acq Time: 24 Mar 2011 10:37 am

Compound	Sample	Spike	Spike	Dup	Spike	Dup	RPD	QC	Limits
	Conc	Added	Res	Res	%Rec	%Rec		RPD	% Rec
1,1-Dichloroethene	0.0	50	50	48	99	96	3	14	64-152
Benzene	0.0	50	44	43	89	87	2	11	77-132
Trichloroethene	0.0	50	48	46	95	92	3	14	78-138
Toluene	0.1	50	45	44	90	88	3	13	78-133
Chlorobenzene	0.0	50	47	46	95	92	2	13	78-137

- Fails Limit Check

3 Spike Recovery and RPD Summary Report - WATER

Method Path : C:\msdchem\1\METHODS\
Method File : F_8260BB.M
Title : Volatile Organic Analysis; Method 8260 Aqueous
Last Update : Thu Mar 17 13:58:45 2011
Response Via : Initial Calibration

Datafile Path: C:\DATA\2011\1103\110324\

-----Sample-----

File : F91658.D
Name : VBLKW04 Acq Time: 24 Mar 2011 11:41 am

-----Spike-----

File : F91651.D
Name : LCS050 50uL #14253/50mL Acq Time: 24 Mar 2011 9:49 am

--Spike Duplicate--

File : F91653.D
Name : LCSD050 50uL #14253/50mL Acq Time: 24 Mar 2011 10:21 am

Compound	Sample	Spike	Spike	Dup	Spike	Dup	RPD	QC Limits
	Conc	Added	Res	Res	%Rec	%Rec	RPD	% Rec
1,1-Dichloroethene	0.0	50	58	60	116	120	3	14 64-152
Benzene	0.0	50	52	53	103	107	3	11 77-132
Trichloroethene	0.0	50	54	56	108	113	4	14 78-138
Toluene	0.0	50	52	55	103	109	5	13 78-133
Chlorobenzene	0.0	50	52	56	105	112	7	13 78-137

- Fails Limit Check

VOLATILE METHOD BLANK SUMMARY

Lab Name: FIRST ENVIRONMENTAL LABS Contract: MWH VBLK01

Lab Code: FEL Case No.: BLACKW SAS No.: SDG No.: _____

Lab File ID: F91658.D Lab Sample ID: VBLKW04

Date Analyzed: 3/24/2011 Time Analyzed: 11:41

GC Column: ZEB-624 ID: 0.32 (mm) Heated Purge: (Y/N) N

Instrument ID: GC/MS "F"

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 LCS050	LCS050	F91651.D	9:49
02 G138-21MS	11-1044-004MS	F91652.D	10:05
03 LCSD050	LCSD050	F91653.D	10:21
04 G138-21MSD	11-1044-004MSD	F91654.D	10:37
05 G138-21	11-1044-004	F91660.D	12:13
06 FB02-21	11-1044-009	F91662.D	12:45
07 FB01-21	11-1044-002	F91664.D	13:17
08 TB01-21	11-1044-001	F91666.D	13:49
09 G117-21	11-1044-003	F91668.D	14:21
10 G126-21	11-1044-005	F91670.D	14:53
11 G118S-21	11-1044-006	F91672.D	15:24
12 G127-21	11-1044-007	F91674.D	15:56
13 G127-921	11-1044-008	F91676.D	16:28

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name:	FIRST ENVIRONMENTAL LABS	Contract:	MWH	
Lab Code:	FEL	Case No.:	BLACKW	
Matrix: (soil/water)	WATER	Lab Sample ID:	VBLKW04	
Sample wt/vol:	5.0 (g/ml)	ML	Lab File ID:	F91658.D
Level: (low/med)	LOW	Date Received:	3/18/2011	
% Moisture: not dec.		Date Analyzed:	3/24/2011	
GC Column:	ZEB-624	ID: 0.32 (mm)	Dilution Factor:	1.0
Soil Extract Volume:	(uL)	Soil Aliquot Volume:	(uL)	

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/L	Q
74-87-3	Chloromethane		10	U
75-01-4	Vinyl Chloride		2	U
74-83-9	Bromomethane		5	U
75-00-3	Chloroethane		10	U
75-69-4	Trichlorofluoromethane		5	U
67-64-1	Acetone		100	U
75-35-4	1,1-Dichloroethene		5	U
75-09-2	Methylene chloride		5	U
75-15-0	Carbon disulfide		5	U
156-60-5	trans-1,2-Dichloroethene		5	U
156-59-2	cis-1,2-Dichloroethene		5	U
1634-04-4	Methyl-t-butyl ether (MTBE)		5	U
108-05-4	Vinyl Acetate		10	U
75-34-3	1,1-Dichloroethane		5	U
594-20-7	2,2-Dichloropropane		5	U
78-93-3	2-Butanone (MEK)		10	U
74-97-5	Bromochloromethane		5	U
67-66-3	Chloroform		1	U
71-55-6	1,1,1-Trichloroethane		5	U
56-23-5	Carbon tetrachloride		5	U
563-58-6	1,1-Dichloropropene		5	U
107-06-2	1,2-Dichloroethane		5	U
71-43-2	Benzene		5	U
79-01-6	Trichloroethene		5	U
78-87-5	1,2-Dichloropropane		5	U
75-27-4	Bromodichloromethane		1	U
110-75-8	2-Chloroethyl vinyl ether		5	U
10061-01-5	cis-1,3-Dichloropropene		1	U
108-10-1	4-Methyl-2-pentanone		10	U
108-88-3	Toluene		5	U
10061-02-6	trans-1,3-Dichloropropene		1	U
79-00-5	1,1,2-Trichloroethane		5	U
591-78-6	2-Hexanone		10	U
127-18-4	Tetrachloroethene		5	U
142-28-9	1,3-Dichloropropane		5	U
124-48-1	Chlorodibromomethane		1	U
108-90-7	Chlorobenzene		5	U
100-41-4	Ethyl benzene		5	U
1330-20-7	m&p-Xylene		5	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name:	<u>FIRST ENVIRONMENTAL LABS</u>	Contract:	<u>MWH</u>
Lab Code:	<u>FEL</u>	Case No.:	<u>BLACKW</u>
Matrix: (soil/water)	<u>WATER</u>	SAS No.:	<u></u>
Sample wt/vol:	<u>5.0</u> (g/ml)	SDG No.:	<u></u>
Level: (low/med)	<u>ML</u>	Lab Sample ID:	<u>VBLKW04</u>
% Moisture: not dec.	<u></u>	Lab File ID:	<u>F91658.D</u>
GC Column:	<u>ZEB-624</u>	Date Received:	<u>3/18/2011</u>
ID:	<u>0.32</u> (mm)	Date Analyzed:	<u>3/24/2011</u>
Soil Extract Volume:	<u></u> (uL)	Dilution Factor:	<u>1.0</u>
		Soil Aliquot Volume:	<u></u> (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg)	UG/L	Q
---------	----------	-----------------	------	---

95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	1	U
630-20-6	1,1,1,2-Tetrachloroethane	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
96-18-4	1,2,3-Trichloropropane	5	U

Quantitation Report (QT Reviewed)

Data Path : C:\DATA\2011\1103\110324\
Data File : F91658.D
Acq On : 24 Mar 2011 11:41 am
Operator : PAM
Sample : VBLKW04
Misc : 5.0mLs Purged, ISTD #14247
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 24 13:01:39 2011
Quant Method : C:\MSDCHEM\1\METHODS\F_8260BB.M
Quant Title : Volatile Organic Analysis; Method 8260 Aqueous
QLast Update : Thu Mar 17 13:58:45 2011
Response via : Initial Calibration

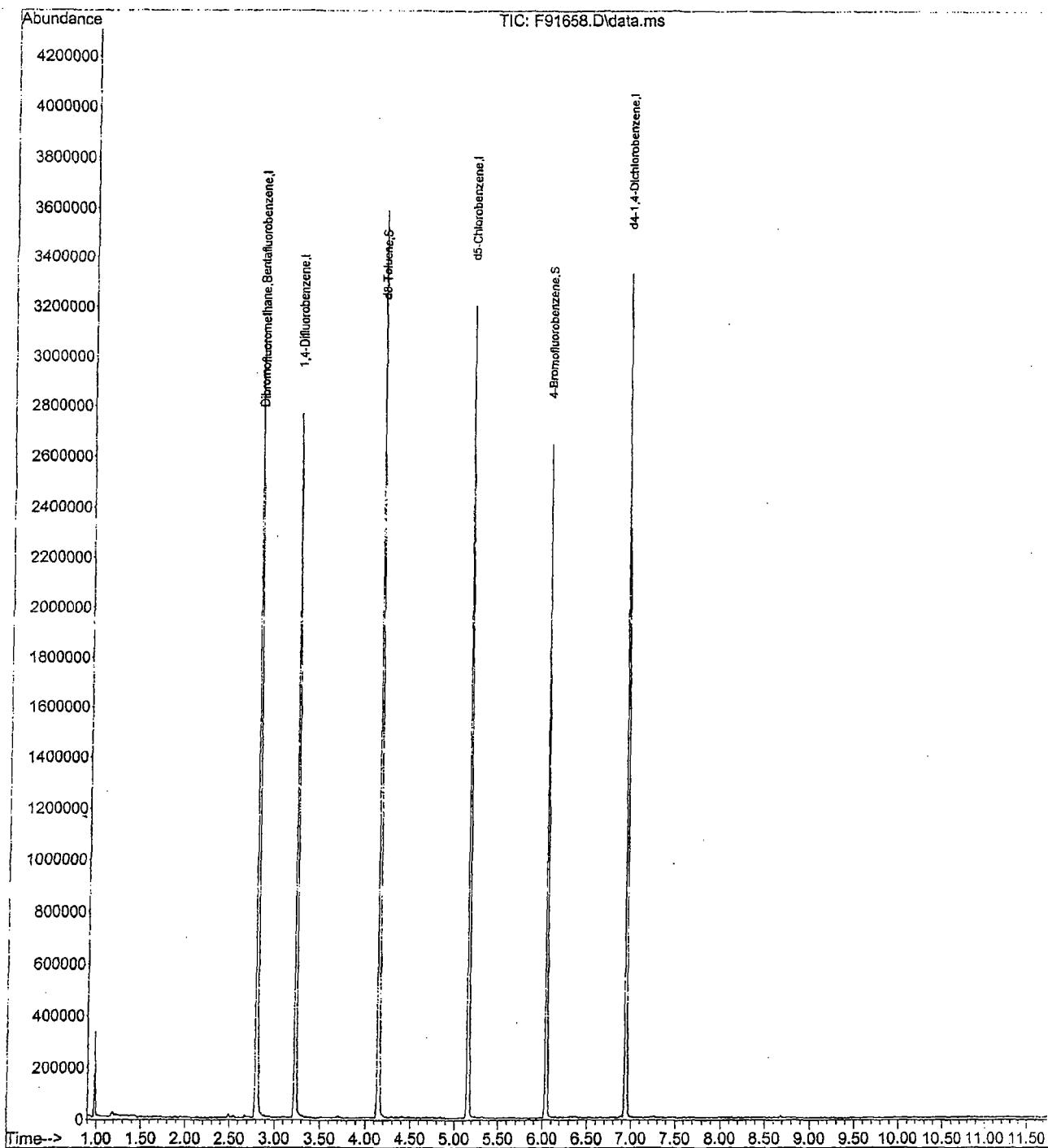
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) Pentafluorobenzene	2.800	168	880231	50.00	ug/L	0.00
36) 1,4-Difluorobenzene	3.228	114	1389537	50.00	ug/L	0.00
55) d5-Chlorobenzene	5.157	117	1239827	50.00	ug/L	0.00
71) d4-1,4-Dichlorobenzene	6.940	152	626853	50.00	ug/L	0.00
<hr/>						
System Monitoring Compounds						
31) Dibromofluoromethane	2.805	111	448771	54.55	ug/L	-0.01
Spiked Amount 50.000	Range 75 - 128		Recovery	=	109.10%	
52) d8-Toluene	4.143	98	1596658	48.69	ug/L	0.00
Spiked Amount 50.000	Range 90 - 112		Recovery	=	97.38%	
69) 4-Bromofluorobenzene	6.041	95	694774	50.05	ug/L	0.00
Spiked Amount 50.000	Range 72 - 120		Recovery	=	100.10%	
<hr/>						
Target Compounds					Qvalue	
<hr/>						

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\DATA\2011\1103\110324\
Data File : F91658.D
Acq On : 24 Mar 2011 11:41 am
Operator : PAM
Sample : VBLKW04
Misc : 5.0mLs Purged, ISTD #14247
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Mar 24 13:01:39 2011
Quant Method : C:\MSDCHEM\1\METHODS\F_8260BB.M
Quant Title : Volatile Organic Analysis; Method 8260 Aqueous
QLast Update : Thu Mar 17 13:58:45 2011
Response via : Initial Calibration



VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: FIRST ENVIRONMENTAL LABS Contract: MWH
 Lab Code: FEL Case No.: BLACKW SAS No.: SDG No.:
 Lab File ID: F91648.D BFB Injection Date: 3/24/2011
 Instrument ID: GC/MS "F" BFB Injection Time: 8:57
 GC Column: ZEB-624 ID: 0.32 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	17.7
75	30.0 - 66.0% of mass 95	49.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0.7 (1.1)1
174	50.0 - 120.0% of mass 95	68.1
175	4.0 - 9.0% of mass 174	5.6 (8.3)1
176	93.0 - 101.0% of mass 174	66.1 (97.0)1
177	5.0 - 9.0% of mass 176	4.5 (6.8)2

1-Value is % mass 174

2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD050	VSTD050	F91650.D	3/24/2011	9:33
02 LCS050	LCS050	F91651.D	3/24/2011	9:49
03 G138-21MS	11-1044-004MS	F91652.D	3/24/2011	10:05
04 LCSD050	LCSD050	F91653.D	3/24/2011	10:21
05 G138-21MSD	11-1044-004MSD	F91654.D	3/24/2011	10:37
06 VBLK01	VBLKW04	F91658.D	3/24/2011	11:41
07 G138-21	11-1044-004	F91660.D	3/24/2011	12:13
08 FB02-21	11-1044-009	F91662.D	3/24/2011	12:45
09 FB01-21	11-1044-002	F91664.D	3/24/2011	13:17
10 TB01-21	11-1044-001	F91666.D	3/24/2011	13:49
11 G117-21	11-1044-003	F91668.D	3/24/2011	14:21
12 G126-21	11-1044-005	F91670.D	3/24/2011	14:53
13 G118S-21	11-1044-006	F91672.D	3/24/2011	15:24
14 G127-21	11-1044-007	F91674.D	3/24/2011	15:56
15 G127-921	11-1044-008	F91676.D	3/24/2011	16:28

6 Response Factor Report GCMS_F

Method Path : C:\msdchem\1\METHODS\

Method File : F_8260BB.M

Title : Volatile Organic Analysis; Method 8260 Aqueous

Last Update : Thu Apr 14 15:51:42 2011

Response Via : Initial Calibration

Calibration Files

5	=F91438.D	10	=F91437.D	20	=F91436.D	50	=F91435.D	100	=F91442.D	200	=F91433.D
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	Compound		5	10	20	.50	100	200	Avg	%RS
D										
1)	T	Pentafluorobenzene				ISTD				
2)	T	Dichlorodifluo...	0.441	0.591	0.487	0.652	0.547	0.709	0.571	17.59
3)	P	Chloromethane	0.349	0.471	0.362	0.470	0.379	0.469	0.417	14.21
4)	C	Vinyl Chloride	0.360	0.465	0.359	0.489	0.404	0.536	0.435	16.69
5)	T	Bromomethane	0.203	0.316	0.208	0.235	0.203	0.106	0.212	31.83
6)	T	Chloroethane	0.228	0.298	0.217	0.297	0.224	0.192	0.243	18.26
7)	T	Trichlorofluor...	0.561	0.771	0.572	0.813	0.622	0.835	0.696	17.91
8)	T	Ethyl ether	0.361	0.451	0.345	0.466	0.373	0.445	0.407	12.94
9)	T	Acrolein	0.007	0.031	0.007	0.032	0.019	0.035	0.022	58.61
10)	T	Acetone	0.169	0.204	0.152	0.210	0.120	0.215	0.178	21.32
11)	CM	1,1-Dichloroet...	0.589	0.774	0.609	0.820	0.689	0.839	0.720	14.88
12)	T	Iodomethane	0.442	0.386	0.445	0.529	0.552	0.639	0.499	18.37
13)	T	Ailyl chloride	0.216	0.301	0.239	0.322	0.278	0.331	0.281	16.34
14)	T	Methylene chlo...	0.482	0.617	0.465	0.590	0.510	0.589	0.542	11.88
15)	T	Acrylonitrile	0.169	0.227	0.172	0.222	0.183	0.216	0.198	13.41
16)	T	Carbon disulfide	1.061	1.383	1.073	1.395	1.232	1.423	1.261	13.07
17)	T	trans-1,2-Dich...	0.447	0.596	0.434	0.579	0.479	0.558	0.515	13.70
18)	T	cis-1,2-Dichlo...	0.471	0.623	0.471	0.605	0.527	0.606	0.550	12.75
19)	T	Methyl-t-butyl...	1.029	1.443	1.128	1.523	1.289	1.575	1.331	16.55
20)	T	n-Hexane	0.494	0.579	0.504	0.622	0.566	0.651	0.569	10.95
21)	T	Vinyl Acetate	0.746	0.987	0.811	1.087	0.962	1.138	0.955	15.95
22)	P	1,1-Dichloroet...	0.773	1.017	0.781	1.025	0.888	1.045	0.922	13.56
23)	T	2,2-Dichloropr...	0.594	0.818	0.638	0.879	0.759	0.951	0.773	17.87
24)	T	2-Butanone (MEK)	0.087	0.093	0.067	0.079	0.056	0.076	0.076	17.63
25)	T	Propionitrile	0.050	0.074	0.061	0.076	0.062	0.079	0.067	16.98
26)	T	Methyl acrylate	0.324	0.448	0.358	0.481	0.404	0.497	0.418	16.47
27)	T	Bromochloromet...	0.281	0.361	0.279	0.357	0.302	0.355	0.322	12.20
28)	T	Methacrylonitrile	0.222	0.294	0.284	0.381	0.318	0.379	0.313	19.38
29)	T	Tetrahydrofura...	0.108	0.138	0.098	0.140	0.115	0.143	0.124	15.49
30)	C	Chloroform	0.832	1.108	0.866	1.127	0.979	1.169	1.014	14.08
31)	S	Dibromofluorom...	0.476	0.462	0.463	0.469	0.472	0.462	0.467	1.25
32)	T	1,1,1-Trichlor...	0.699	0.953	0.723	1.002	0.851	1.071	0.883	17.18
33)	T	Butyl chloride...	0.920	1.206	0.949	1.280	1.078	1.327	1.127	15.21
34)	T	Carbon tetrach...	0.568	0.798	0.605	0.825	0.695	0.856	0.724	16.64
35)	T	1,1-Dichloropr...	0.644	0.828	0.627	0.839	0.715	0.853	0.751	13.64
36)	I	1,4-Difluorobenzene				ISTD				
37)	T	1,2-Dichloroet...	0.374	0.505	0.382	0.495	0.415	0.500	0.445	13.88
38)	M	Benzene	1.099	1.497	1.114	1.469	1.246	1.444	1.311	13.87
39)	T	n-Heptane	0.357	0.408	0.381	0.442	0.406	0.442	0.406	8.28
40)	M	Trichloroethene	0.280	0.395	0.295	0.388	0.324	0.384	0.344	14.80
41)	T	Methyl methacr...	0.142	0.222	0.175	0.248	0.202	0.247	0.206	20.38
42)	C	1,2-Dichloropr...	0.253	0.342	0.264	0.335	0.285	0.331	0.302	13.03
43)	T	Bromodichlorom...	0.371	0.507	0.378	0.508	0.438	0.524	0.454	15.10
44)	T	Dibromomethane	0.157	0.207	0.158	0.207	0.169	0.200	0.183	13.23
45)	T	2-Nitropropane	0.135	0.177	0.153	0.201	0.188	0.206	0.177	15.92
46)	T	2-Chloroethyl ...	0.121	0.162	0.141	0.179	0.166	0.164	0.155	13.27
47)	T	cis-1,3-Dichlo...	0.345	0.481	0.373	0.520	0.451	0.547	0.453	17.68
48)	T	4-Methyl-2-pen...	0.157	0.232	0.183	0.271	0.204	0.279	0.221	22.09
49)	CM	Toluene	0.711	0.970	0.720	0.934	0.793	0.913	0.840	13.51
50)	T	trans-1,3-Dich...	0.381	0.551	0.426	0.571	0.491	0.589	0.501	16.76
51)	T	1,1,2-Trichlor...	0.196	0.253	0.197	0.258	0.216	0.255	0.229	12.82
52)	S	d8-Toluene	1.175	1.189	1.175	1.185	1.165	1.192	1.180	0.85
53)	T	1,2-Dibromoethane	0.227	0.305	0.238	0.315	0.262	0.317	0.277	14.50
54)	T	1,4-Dichloro-2...	0.028	0.041	0.032	0.040	0.034	0.039	0.036	14.37

Response Factor Report GCMS_F

Method Path : C:\msdchem\1\METHODS\

Method File : F_8260BB.M

Title : Volatile Organic Analysis; Method 8260 Aqueous

		ISTD									
55)	I	d5-Chlorobenzene									
56)	T	Ethyl methacry...	0.249	0.390	0.323	0.455	0.378	0.462	0.376		21.52
57)	T	2-Hexanone	0.105	0.168	0.131	0.207	0.149	0.219	0.163		26.92
58)	T	Tetrachloroethene	0.334	0.428	0.328	0.411	0.351	0.393	0.374		11.26
59)	T	1,3-Dichloropr...	0.431	0.569	0.441	0.571	0.485	0.570	0.511		13.11
60)	T	Chlorodibromom...	0.242	0.355	0.272	0.368	0.314	0.385	0.323		17.55
61)	T	1,2-Dibromoeth...	0.241	0.322	0.255	0.337	0.284	0.337	0.296		14.28
62)	M	Chlorobenzene	0.792	1.040	0.803	1.017	0.891	1.018	0.927		12.21
63)	C	Ethyl benzene	1.368	1.811	1.467	1.859	1.633	1.713	1.642		11.75
64)	T	m&p-Xylene	0.555	0.714	0.577	0.731	0.633	0.690	0.650		11.30
65)	T	o-Xylene	0.494	0.666	0.545	0.690	0.616	0.679	0.615		13.00
66)	T	Styrene	0.815	1.174	0.917	1.201	1.058	1.198	1.061		15.33
67)	T	Bromoform	0.131	0.197	0.147	0.216	0.177	0.229	0.183		21.14
68)	T	Isopropylbenze...	1.233	1.665	1.456	1.797	1.669	1.730	1.592		13.16
69)	S	4-Bromofluorob...	0.556	0.551	0.553	0.567	0.568	0.565	0.560		1.37
70)	T	1,1,1,2-Tetra...	0.266	0.352	0.281	0.353	0.309	0.350	0.319		12.21
71)	I	d4-1,4-Dichloroben...									
72)	P	1,1,2,2-Tetra...	0.547	0.784	0.567	0.769	0.613	0.752	0.672		16.06
73)	T	1,2,3-Trichlor...	0.183	0.266	0.187	0.246	0.196	0.240	0.220		16.08
74)	T	n-Propylbenzene	2.863	3.634	3.065	3.662	3.348	3.297	3.312		9.46
75)	T	o-Chlorotoluene	1.745	2.331	1.814	2.265	1.980	2.290	2.071		12.48
76)	T	p-Chlorotoluene	2.081	2.758	2.175	2.693	2.361	2.722	2.465		12.12
77)	T	1,2,4-Trimethyl...	2.031	2.616	2.204	2.648	2.418	2.694	2.435		11.05
78)	T	Bromobenzene	0.577	0.774	0.587	0.747	0.625	0.750	0.677		13.27
79)	T	tert-Butylbenzene	1.528	1.893	1.724	2.066	1.928	2.091	1.872		11.45
80)	T	Pentachloroethane	0.285	0.428	0.329	0.445	0.370	0.442	0.383		17.31
81)	T	1,3,5-Trimethyl...	2.037	2.733	2.247	2.723	2.427	2.687	2.476		11.69
82)	T	sec-Butylbenzene	2.338	2.854	2.599	3.032	2.899	3.031	2.792		9.79
83)	T	1,3-Dichloroben...	1.056	1.444	1.083	1.373	1.144	1.333	1.239		13.30
84)	T	p-Isopropyltol...	1.755	2.298	2.061	2.422	2.258	2.396	2.198		11.48
85)	T	1,4-Dichloroben...	1.115	1.484	1.087	1.427	1.187	1.434	1.289		13.84
86)	T	1,2-Dichloroben...	0.983	1.365	1.009	1.335	1.089	1.335	1.186		15.00
87)	T	n-Butylbenzene	1.255	1.732	1.738	2.022	1.977	2.102	1.804		17.12
88)	T	Hexachloroethane	0.232	0.276	0.244	0.286	0.270	0.293	0.267		9.01
89)	T	1,2-Dibromo-3...	0.071	0.112	0.084	0.125	0.106	0.135	0.105		23.16
90)	T	1,2,4-Trichlor...	0.188	0.326	0.351	0.581	0.536	0.672	0.442		41.37
91)	T	Hexachlorobutane	0.212	0.274	0.224	0.267	0.220	0.256	0.242		10.98
92)	T	1,2,3-Trichlor...	0.120	0.264	0.300	0.483	0.452	0.542	0.360		44.34
93)	T	Naphthalene	0.102	0.448	0.562	1.355	1.329	1.672	0.911		68.39

(#) = Out of Range

Compound List Report GCMS_F

Method Path : C:\msdchem\1\METHODS\
 Method File : F_8260BB.M
 Title : Volatile Organic Analysis; Method 8260 Aqueous
 Last Update : Thu Apr 14 15:51:42 2011
 Response Via : Initial Calibration

Total Cpnds : 93

PK#	Compound Name	QIon	Exp_RT	Rel_RT	Cal	#Qual	A/H	ID
1 I	Pentafluorobenzene	168	2.807	1.000	A	2	A	B
2 T	Dichlorodifluoromethane	85	0.940	0.335	L	1	A	B
3 P	Chloromethane	50	1.029	0.367	A	0	A	B
4 C	Vinyl Chloride	62	1.081	0.385	L	0	A	B
5 T	Bromomethane	94	1.238	0.441	Q	1	A	B
6 T	Chloroethane	64	1.290	0.460	Q	1	A	B
7 T	Trichlorofluoromethane	101	1.405	0.501	L	1	A	B
8 T	Ethyl ether	59	1.541	0.549	A	2	A	B
9 T	Acrolein	56	1.624	0.579	Q	1	A	B
10 T	Acetone	43	1.698	0.605	L	1	A	B
11 CM	1,1-Dichloroethene	61	1.656	0.590	A	2	A	B
12 T	Iodomethane	142	1.750	0.624	L	2	A	B
13 T	Allyl chloride	76	1.834	0.653	L	3	A	B
14 T	Methylene chloride	84	1.902	0.678	A	1	A	B
15 T	Acrylonitrile	53	2.038	0.726	A	1	A	B
16 T	Carbon disulfide	76	1.777	0.633	A	2	A	B
17 T	trans-1,2-Dichloroethene	96	2.028	0.722	A	1	A	A
18 T	cis-1,2-Dichloroethene	96	2.556	0.911	A	2	A	B
19 T	Methyl-t-butyl ether (MTBE)	73	2.011	0.717	L	1	A	B
20 T	n-Hexane	41	2.132	0.760	A	2	A	B
21 T	Vinyl Acetate	43	2.257	0.804	L	1	A	B
22 P	1,1-Dichloroethane	63	2.247	0.801	A	1	A	B
23 T	2,2-Dichloropropane	77	2.539	0.905	L	1	A	B
24 T	2-Butanone (MEK)	72	2.560	0.912	L	1	A	B
25 T	Propionitrile	54	2.613	0.931	L	1	A	B
26 T	Methyl acrylate	55	2.597	0.925	L	1	A	B
27 T	Bromochloromethane	130	2.691	0.959	A	2	A	B
28 T	Methacrylonitrile	41	2.681	0.955	L	1	A	B
29 T	Tetrahydrofuran (THF)	42	2.707	0.965	L	2	A	B
30 C	Chloroform	83	2.723	0.970	A	1	A	B
31 S	Dibromofluoromethane	111	2.817	1.004	A	3	A	B
32 T	1,1,1-Trichloroethane	97	2.811	1.002	L	2	A	B
33 T	Butyl chloride (1-chlorobut...	56	2.864	1.020	L	1	A	B
34 T	Carbon tetrachloride	119	2.900	1.033	L	1	A	B
35 T	1,1-Dichloropropene	75	2.901	1.034	A	2	A	B
36 I	1,4-Difluorobenzene	114	3.235	1.000	A	2	A	B
37 T	1,2-Dichloroethane	62	3.047	0.942	A	1	A	B
38 M	Benzene	78	3.021	0.934	A	1	A	B
39 T	n-Heptane	43	3.125	0.966	A	2	A	B
40 M	Trichloroethene	95	3.392	1.048	A	2	A	B
41 T	Methyl methacrylate	69	3.585	1.108	L	2	A	B
42 C	1,2-Dichloropropane	63	3.538	1.094	A	2	A	B
43 T	Bromodichloromethane	83	3.716	1.149	L	2	A	B
44 T	Dibromomethane	93	3.627	1.121	A	2	A	B
45 T	2-Nitropropane	43	3.888	1.202	L	0	A	B
46 T	2-Chloroethyl vinyl ether	63	3.889	1.202	A	2	A	B
47 T	cis-1,3-Dichloropropene	75	4.364	1.349	L	1	A	B
48 T	4-Methyl-2-pentanone	43	4.076	1.260	L	3	A	B
49 CM	Toluene	92	4.192	1.296	A	1	A	B
50 T	trans-1,3-Dichloropropene	75	3.988	1.233	L	1	A	B
51 T	1,1,2-Trichloroethane	83	4.495	1.389	A	2	A	B
52 S	d8-Toluene	98	4.150	1.283	A	1	A	B
53 T	1,2-Dibromoethane	107	4.845	1.498	A	2	A	B
54 T	1,4-Dichloro-2-butene	53	5.630	1.740	A	3	A	B

55	I	d5-Chlorobenzene	117	5.159	1.000	A	2	A	B
56	T	Ethyl methacrylate	69	4.390	0.851	L	3	A	B
57	T	2-Hexanone	43	4.646	0.901	L	2	A	B
58	T	Tetrachloroethene	166	4.558	0.883	A	2	A	B
59	T	1,3-Dichloropropane	76	4.605	0.893	A	1	A	B
60	T	Chlorodibromomethane	129	4.767	0.924	L	1	A	B
61	T	1,2-Dibromoethane (EDB)	107	4.845	0.939	A	2	A	B
62	M	Chlorobenzene	112	5.180	1.004	A	2	A	B
63	C	Ethyl benzene	91	5.243	1.016	A	1	A	B
64	T	m&p-Xylene	106	5.326	1.032	A	1	A	B
65	T	o-Xylene	106	5.630	1.091	A	1	A	B
66	T	Styrene	104	5.645	1.094	L	1	A	B
67	T	Bromoform	173	5.817	1.128	L	2	A	B
68	T	Isopropylbenzene (cumene)	105	5.901	1.144	A	1	A	B
69	S	4-Bromofluorobenzene	95	6.037	1.170	A	2	A	B
70	T	1,1,1,2-Tetrachloroethane	131	5.243	1.016	A	2	A	B
71	I	d4-1,4-Dichlorobenzene	152	6.942	1.000	A	3	A	B
72	P	1,1,2,2-Tetrachloroethane	83	6.178	0.890	L	3	A	B
73	T	1,2,3-Trichloropropane	110	6.209	0.894	L	2	A	B
74	T	n-Propylbenzene	91	6.220	0.896	A	1	A	B
75	T	o-Chlorotoluene	91	6.299	0.907	A	1	A	B
76	T	p-Chlorotoluene	91	6.382	0.919	A	1	A	B
77	T	1,2,4-Trimethylbenzene	105	6.356	0.916	A	1	A	B
78	T	Bromobenzene	156	6.152	0.886	A	2	A	B
79	T	tert-Butylbenzene	119	6.607	0.952	A	2	A	B
80	T	Pentachloroethane	167	6.649	0.958	L	3	A	B
81	T	1,3,5-Trimethylbenzene	105	6.649	0.958	A	1	A	B
82	T	sec-Butylbenzene	105	6.780	0.977	A	1	A	B
83	T	1,3-Dichlorobenzene	146	6.890	0.992	A	2	A	B
84	T	p-Isopropyltoluene (cymene)	119	6.895	0.993	A	1	A	B
85	T	1,4-Dichlorobenzene	146	6.963	1.003	A	2	A	B
86	T	1,2-Dichlorobenzene	146	7.261	1.046	A	2	A	B
87	T	n-Butylbenzene	91	7.224	1.041	L	1	A	B
88	T	Hexachloroethane	201	7.444	1.072	A	2	A	B
89	T	1,2-Dibromo-3-chloropropane	75	7.909	1.139	L	2	A	B
90	T	1,2,4-Trichlorobenzene	180	8.562	1.233	L	2	A	B
91	T	Hexachlorobutadiene	225	8.683	1.251	A	2	A	B
92	T	1,2,3-Trichlorobenzene	180	8.965	1.291	L	2	A	B
93	T	Naphthalene	128	8.766	1.263	L	0	A	B

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
 #Qual = number of qualifiers

A/H = Area or Height

ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All

7 Evaluate Continuing Calibration Report

Data Path : C:\DATA\2011\1103\110324\
 Data File : F91650.D
 Acq On : 24 Mar 2011 9:33 am
 Operator : PAM
 Sample : VSTD050 50uL #14269,14270/50mL
 Misc : 5.0mLs Purged, ISTD #14247
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Mar 24 09:45:43 2011
 Quant Method : C:\MSDCHEM\1\METHODS\F_8260BB.M
 Quant Title : Volatile Organic Analysis; Method 8260 Aqueous
 QLast Update : Thu Mar 17 13:58:45 2011
 Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 30% Max. R.T. Dev 0.50min
 Max. RRF Dev : 200% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev (min)
1 I	Pentafluorobenzene	50.000	50.000	0.0	84	0.00
2 T	Dichlorodifluoromethane	50.000	42.918	14.2	74	-0.02
3 P	Chloromethane	50.000	44.840	10.3	67	-0.02
4 C	Vinyl Chloride	50.000	40.816	18.4	71	-0.02
5 T	Bromomethane	50.000	43.932	12.1	77	-0.02
6 T	Chloroethane	50.000	46.621	6.8	68	-0.02
7 T	Trichlorofluoromethane	50.000	47.025	6.0	77	-0.02
8 T	Ethyl ether	50.000	38.880	22.2	57	-0.02
9 T	Acrolein	250.000	120.333	51.9	20	-0.02
10 T	Acetone	50.000	36.838	26.3	58	-0.02
11 CM	1,1-Dichloroethene	50.000	41.568	16.9	61	-0.02
12 T	Iodomethane	50.000	37.746	24.5	74	-0.02
13 T	Allyl chloride	50.000	33.540	32.9	56	-0.02
14 T	Methylene chloride	50.000	39.179	21.6	60	-0.01
15 T	Acrylonitrile	250.000	184.787	26.1	55	-0.02
16 T	Carbon disulfide	50.000	36.285	27.4	55	-0.02
17 T	trans-1,2-Dichloroethene	50.000	40.445	19.1	60	-0.02
18 T	cis-1,2-Dichloroethene	50.000	40.856	18.3	62	-0.02
19 T	Methyl-t-butyl ether (MTBE)	50.000	36.386	27.2	61	-0.01
20 T	n-Hexane	50.000	36.791	26.4	56	-0.01
21 T	Vinyl Acetate	50.000	28.979	42.0	49	-0.02
22 P	1,1-Dichloroethane	50.000	41.078	17.8	62	-0.02
23 T	2,2-Dichloropropane	50.000	38.409	23.2	67	-0.01
24 T	2-Butanone (MEK)	50.000	36.501	27.0	56	-0.01
25 T	Propionitrile	50.000	32.683	34.6	54	-0.01
26 T	Methyl acrylate	50.000	32.931	34.1	55	-0.01
27 T	Bromochloromethane	50.000	42.128	15.7	64	-0.02
28 T	Methacrylonitrile	50.000	34.921	30.2	56	-0.01
29 T	Tetrahydrofuran (THF)	50.000	32.500	35.0	53	-0.01
30 C	Chloroform	50.000	45.385	9.2	68	-0.01
31 S	Dibromofluoromethane	50.000	51.469	-2.9	86	-0.01
32 T	1,1,1-Trichloroethane	50.000	40.018	20.0	68	-0.01
33 T	Butyl chloride (1-chlorobut	50.000	35.811	28.4	60	-0.01
34 T	Carbon tetrachloride	50.000	42.189	15.6	70	-0.01
35 T	1,1-Dichloropropene	50.000	41.491	17.0	62	-0.01
36 I	1,4-Difluorobenzene	50.000	50.000	0.0	80	0.00
37 T	1,2-Dichloroethane	50.000	49.345	1.3	71	0.00
38 M	Benzene	50.000	40.865	18.3	58	0.00
39 T	n-Heptane	50.000	37.379	25.2	55	-0.01
40 M	Trichloroethene	50.000	44.939	10.1	64	0.00
41 T	Methyl methacrylate	50.000	35.242	29.5	54	0.00
42 C	1,2-Dichloropropane	50.000	40.703	18.6	59	0.00
43 T	Bromodichloromethane	50.000	43.548	12.9	69	0.00
44 T	Dibromomethane	50.000	44.157	11.7	63	0.00
45 T	2-Nitropropane	50.000	41.471	17.1	67	0.00
46 T	2-Chloroethyl vinyl ether	50.000	45.882	8.2	64	0.00
47 T	cis-1,3-Dichloropropene	50.000	39.817	20.4	65	0.00
48 T	4-Methyl-2-pentanone	50.000	32.229	35.5	50	0.00
49 CM	Toluene	50.000	42.202	15.6	61	0.00

Evaluate Continuing Calibration Report

Data Path : C:\DATA\2011\1103\110324\
 Data File : F91650.D
 Acq On : 24 Mar 2011 9:33 am
 Operator : PAM
 Sample : VSTD050 50uL #14269, 14270/50mL
 Misc : 5.0mLs Purged, ISTD #14247
 ALS Vial : 2 Sample Multiplier: 1

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 Quant Method : C:\MSDCHEM\1\METHODS\F_8260BB.M
 Quant Title : Volatile Organic Analysis; Method 8260 Aqueous
 QLast Update : Thu Mar 17 13:58:45 2011
 Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 30% Max. R.T. Dev 0.50min
 Max. RRF Dev : 200% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
50 T	trans-1,3-Dichloropropene	50.000	39.501	21.0	63	0.00
51 T	1,1,2-Trichloroethane	50.000	42.318	15.4	60	0.00
52 S	d8-Toluene	50.000	48.657	2.7	78	0.00
53 T	1,2-Dibromoethane	50.000	43.370	13.3	61	0.00
54 T	1,4-Dichloro-2-butene	50.000	44.340	11.3	64	0.00
55 I	d5-Chlorobenzene	50.000	50.000	0.0	78	0.00
56 T	Ethyl methacrylate	50.000	36.137	27.7	55	0.00
57 T	2-Hexanone	50.000	31.452	37.1	48	0.00
58 T	Tetrachloroethene	50.000	54.327	-8.7	77	0.00
59 T	1,3-Dichloropropane	50.000	44.249	11.5	61	0.00
60 T	Chlorodibromomethane	50.000	43.618	12.8	68	0.00
61 T	1,2-Dibromoethane (EDB)	50.000	44.870	10.3	61	0.00
62 M	Chlorobenzene	50.000	44.872	10.3	63	0.00
63 C	Ethyl benzene	50.000	47.935	4.1	66	0.00
64 T	m&p-Xylene	100.000	93.840	6.2	65	0.00
65 T	o-Xylene	50.000	46.396	7.2	64	0.00
66 T	Styrene	50.000	42.737	14.5	65	0.00
67 T	Bromoform	50.000	41.675	16.7	65	0.00
68 T	Isopropylbenzene (cumene)	50.000	49.806	0.4	68	0.00
69 S	4-Bromofluorobenzene	50.000	51.206	-2.4	78	0.00
70 T	1,1,1,2-Tetrachloroethane	50.000	50.025	-0.0	70	0.00
71 I	d4-1,4-Dichlorobenzene	50.000	50.000	0.0	82	0.00
72 P	1,1,2,2-Tetrachloroethane	50.000	35.627	28.7	55	0.00
73 T	1,2,3-Trichloropropane	50.000	42.196	15.6	66	0.00
74 T	n-Propylbenzene	50.000	46.642	6.7	69	0.00
75 T	o-Chlorotoluene	50.000	45.264	9.5	68	0.00
76 T	p-Chlorotoluene	50.000	45.870	8.3	69	0.00
77 T	1,2,4-Trimethylbenzene	50.000	48.115	3.8	73	0.00
78 T	Bromobenzene	50.000	43.427	13.1	65	0.00
79 T	tert-Butylbenzene	50.000	48.907	2.2	73	0.00
80 T	Pentachloroethane	50.000	32.771	34.5	52	0.00
81 T	1,3,5-Trimethylbenzene	50.000	47.850	4.3	72	0.00
82 T	sec-Butylbenzene	50.000	47.949	4.1	73	0.00
83 T	1,3-Dichlorobenzene	50.000	44.832	10.3	67	0.00
84 T	p-Isopropyltoluene (cymene)	50.000	49.290	1.4	74	0.00
85 T	1,4-Dichlorobenzene	50.000	43.376	13.2	64	0.00
86 T	1,2-Dichlorobenzene	50.000	44.054	11.9	64	0.00
87 T	n-Butylbenzene	50.000	42.356	15.3	71	0.00
88 T	Hexachloroethane	50.000	49.285	1.4	76	0.00
89 T	1,2-Dibromo-3-chloropropane	50.000	39.129	21.7	66	0.00
90 T	1,2,4-Trichlorobenzene	50.000	33.954	32.1	61	0.00
91 T	Hexachlorobutadiene	50.000	44.373	11.3	66	0.00
92 T	1,2,3-Trichlorobenzene	50.000	35.239	29.5	62	0.00
93 T	Naphthalene	50.000	28.262	43.5	54	0.00

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: FIRST ENVIRONMENTAL LABS Contract: MWH
 Lab Code: FEL Case No.: BLACKW SAS No.: SDG No.:
 Lab File ID (Standard): F91650.D Date Analyzed: 3/24/2011
 Instrument ID: GC/MS "F" Time Analyzed: 9:33
 GC Column: ZEB-624 ID: 0.32 (mm) Heated Purge (Y/N): N

	IS1		IS2		IS3	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	947489	2.80	1470264	3.23	1330810	5.16
UPPER LIMIT	1894978	3.30	2940528	3.73	2661620	5.66
LOWER LIMIT	473745	2.30	735132	2.73	665405	4.66
EPA SAMPLE NO.						
01 LCS050	853883	2.81	1323259	3.24	1215777	5.16
02 G138-21MS	967926	2.80	1491222	3.23	1366360	5.15
03 LCSD050	824291	2.81	1292934	3.24	1175951	5.16
04 G138-21MSD	952695	2.80	1489761	3.23	1364719	5.16
05 VBLK01	880231	2.80	1389537	3.23	1239827	5.16
06 G138-21	869751	2.80	1348863	3.23	1235128	5.15
07 FB02-21	852623	2.80	1349634	3.23	1208514	5.16
08 FB01-21	839342	2.80	1318264	3.23	1216344	5.16
09 TB01-21	829351	2.80	1303246	3.23	1172498	5.15
10 G117-21	814309	2.80	1265548	3.23	1163769	5.15
11 G126-21	935507	2.80	1455634	3.23	1315473	5.15
12 G118S-21	935725	2.80	1447420	3.23	1323083	5.16
13 G127-21	902135	2.80	1398033	3.23	1271567	5.16
14 G127-921	898593	2.80	1380403	3.23	1269577	5.15

IS1 = Pentafluorobenzene
 IS2 = 1,4-Difluorobenzene
 IS3 = d5-Chlorobenzene
 IS4 = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: FIRST ENVIRONMENTAL LABS Contract: MWH
 Lab Code: FEL , Case No.: BLACKW SAS No.: SDG No.:
 Lab File ID (Standard): F91650.D Date Analyzed: 3/24/2011
 Instrument ID: GC/MS "F" Time Analyzed: 9:33
 GC Column: ZEB-624 ID: 0.32 (mm) Heated Purge (Y/N): Y

	IS4						
	AREA #	RT #	AREA #	RT #	AREA #	RT #	
12 HOUR STD	749259	6.94					
UPPER LIMIT	1498518	6.44					
LOWER LIMIT	374630	7.44					
EPA SAMPLE NO.							
01 LCS050	672540	6.95					
02 G138-21MS	778879	6.94					
03 LCSD050	658769	6.94					
04 G138-21MSD	768539	6.94					
05 VBLK01	626853	6.94					
06 G138-21	599972	6.94					
07 FB02-21	601238	6.94					
08 FB01-21	628773	6.94					
09 TB01-21	588889	6.94					
10 G117-21	579492	6.94					
11 G126-21	653847	6.94					
12 G118S-21	658100	6.94					
13 G127-21	617564	6.94					
14 G127-921	627649	6.94					

- IS1 = Pentafluorobenzene
 IS2 = 1,4-Difluorobenzene
 IS3 = d5-Chlorobenzene
 IS4 = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area

AREA LOWER LIMIT = - 50% of internal standard area

RT UPPER LIMIT = +0.50 minutes of internal standard RT

RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column to be used to flag values outside QC limit with an asterisk.

* Values outside of contract required QC limits

APPENDIX B

DATA QUALITY EVALUATION REPORT

**DATA QUALITY EVALUATION REPORT
FOR LONG-TERM GROUNDWATER MONITORING (ROUND 13)**

**BLACKWELL FOREST PRESERVE LANDFILL SITE
DUPAGE COUNTY, ILLINOIS**



MWH Americas, Inc.
175 West Jackson Boulevard, Suite 1900
Chicago, Illinois 60604

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ACRONYMS AND ABBREVIATIONS

%RSD	Relative percent standard deviations
HCl	Hydrochloric acid
µg/L	Micrograms per liter
MS/MSD	Matrix spike/matrix spike duplicate
QC	Quality control
RPD	Relative percent difference
RRF	Relative response factor
TCL	Target compound list
USEPA	United States Environmental Protection Agency
VOA	Volatile organic analysis
VOCs	Volatile organic compounds

1.0 INTRODUCTION

The following text is based on the data review of groundwater samples collected at Blackwell Forest Preserve Landfill Site between March 17 and 18, 2011.

Five water samples were analyzed by First Environmental Laboratories, Inc. of Naperville, Illinois, for the following parameters:

- Target compound list (TCL) Volatile Organic Compounds (VOCs) by SW-846 method 5030B/8260B

The following quality control (QC) samples were collected during sampling between March 17 and 18, 2011:

- One field duplicate for sample BW-GW-G127-21 (BW-GW-G127-921)
- One trip blank (BW-GW-TB01-21)
- Two field blanks collected on March 17 and 18, 2011 (BW-GW-FB01-21 and BW-GW-FB02-21, respectively)

2.0 VOLATILE ORGANIC COMPOUNDS DATA REVIEW

2.1 Holding Times

Holding time reflects the length of time after sample collection that a sample remains representative of environmental conditions. The length of time between sample collection and analysis was evaluated. All holding times met requirements.

2.2 Gas Chromatography/Mass Spectrometry Instrument Performance Check

Instrument performance was checked daily, prior to analysis, and all ion abundance requirements were met.

2.3 Initial Calibration

Initial calibration was performed using six calibration standards at concentrations of 5, 10, 20, 50, 100, and 200 micrograms per liter ($\mu\text{g/L}$). Relative percent standard deviations (%RSD) were less than or equal to 30% for all standard compounds and less than or equal to 40% for all non-standard and polar compounds. The *United States Environmental Protection Agency (USEPA) Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 1999) requires the average relative response factor (RRF) to be greater than 0.05. The initial calibration met acceptance criteria.

2.4 Continuing Calibration

All volatile organic compound sample analyses were performed within a seven hour analysis period. Therefore, continuing calibration was not required because the analysis period did not exceed 12 hours per the continuing calibration standards.

2.5 Internal Standards

The retention times were within ± 30 seconds of the internal standards for all environmental and QC samples. The extracted ion current profile areas were within -50 to +150% of the internal standards for all environmental and QC samples.

2.6 Retention Time Windows

The retention time windows were within the daily retention time windows established by the daily routine calibration standard for every environmental and QC sample.

2.7 System Monitoring Compounds

All system monitoring compound recoveries were within laboratory QC limits.

2.8 Blanks

Trip blank BW-GW-TB01-21 accompanied coolers containing samples requiring VOC analysis and was analyzed to verify that samples were not contaminated by the sample container or other samples during transport to and/or during storage at the laboratory. The trip blank accompanied empty bottle sets to the site and consisted of a set of two volatile organic analysis (VOA) vials that had been filled by the laboratory with reagent-grade, organic-free water and preserved with 1:1 hydrochloric acid (HCl). The trip blank remained unopened and with the samples during sample collection and shipping. No VOCs were detected in trip blank BW-GW-TB01-21.

Field blanks BW-GW-FB01-21 and BW-GW-FB02-21 were collected on March 17 and 18, 2011, respectively. No VOCs were detected in the field blanks.

2.9 Field Duplicates

A field duplicate sample was collected and analyzed to evaluate sampling and analytical representativeness and precision. One field duplicate was collected for analysis. The parent and field duplicate samples collected at monitoring well G127 were non-detect for VOCs with the exception of cis-1,2-dichloroethene (7.8 µg/L [parent]; 7.6 µg/L [duplicate]) and vinyl chloride (2.9 µg/L [parent]; 3.0 µg/L [duplicate]). A comparison of actual sample results and relative percent differences (RPDs) indicates good agreement (<40) between parent samples and their respective duplicates.

	Units	BW-GW-G127-21	BW-GW-G127-921	RPD
		Parent Sample	Duplicate Sample	(%)
cis-1,2-Dichloroethene	µg/L	7.8	7.6	2.60%
Vinyl chloride	µg/L	2.9	3.0	3.39%

2.10 Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) analysis was conducted on sample BW-GW-G118S-21. 1,1-Dichloroethene, benzene, chlorobenzene, toluene, and trichloroethene were spiked into the sample at concentrations of 50 µg/L. The percent recoveries and RPDs were compared to laboratory QC limits. The MS/MSDs were acceptable.

3.0 CONCLUSIONS

Groundwater data collected during the Round 13 groundwater-monitoring event was evaluated using the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (USEPA 1999) and the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (USEPA 1994). Based on the review of the VOC data, the data are acceptable, and no qualifications are required.

4.0 REFERENCES

USEPA. 1999. *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*. EPA 540/R-99/013.

USEPA. 1994. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA 540/R-94/008.

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\\uschi4s02\Warrenville\jobs\100\7333 Blackwell\4.0 Execution (Project Deliverables)\4.3 Groundwater Monitoring\4.3.2 GW Monitoring - FY2011\March 2011 GWS Report\Appendix B\Round 13 Data Verification.doc

APPENDIX C

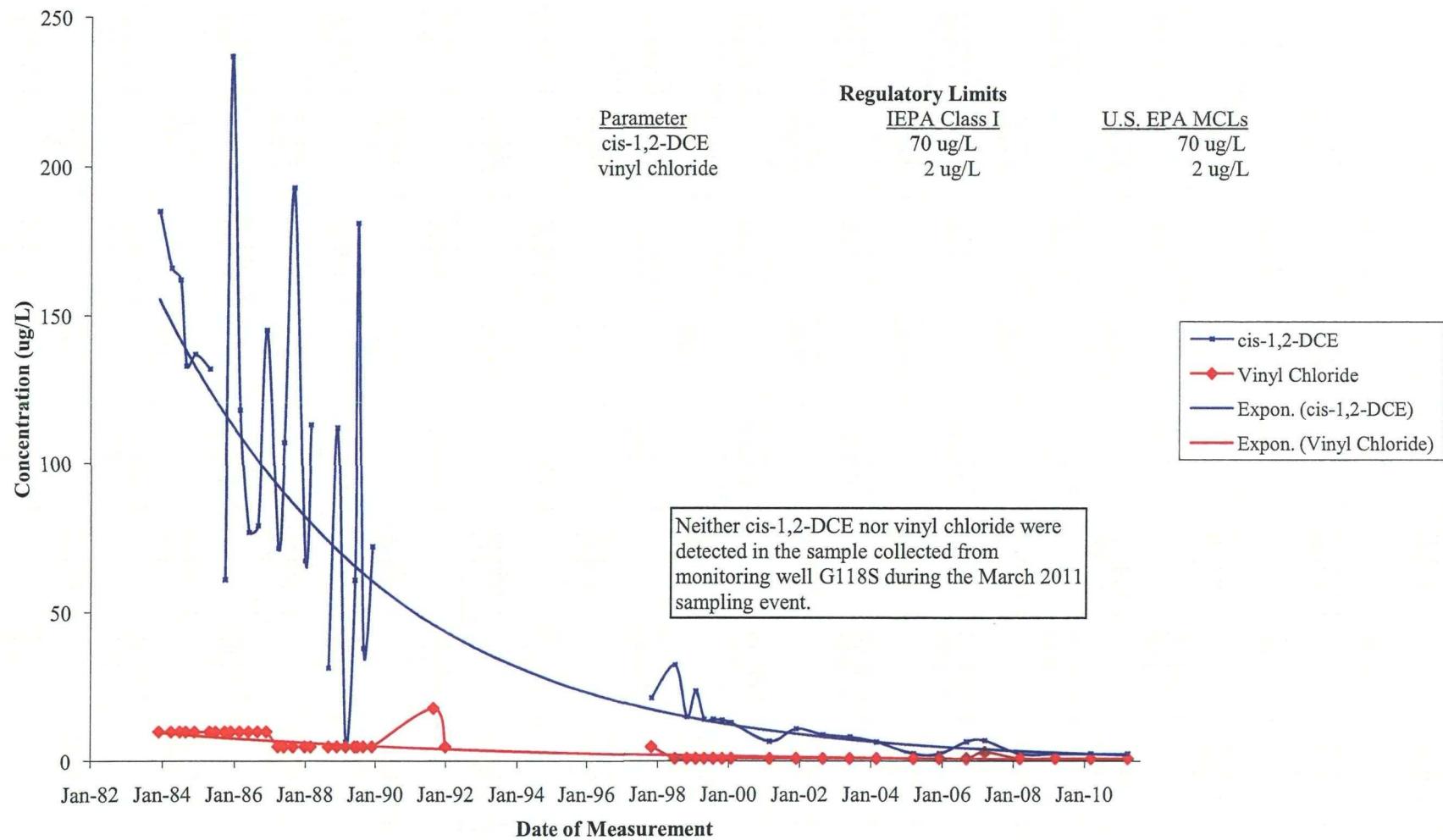
TREND LINE ANALYSIS

VOC Trend Analysis Drawings 1 and 2 Outliers and Modified Trend Line Presentation

Data points on the Trend Analysis Drawings are considered outliers when the concentrations are considerably lower than prior or subsequent dates, and when the concentrations fell below the calculated trend line. An example of this type of outlier is a non-detect, presented as one-half the detection limit, which is preceded and followed by a detection of relatively high concentration. An evaluation of the data set that produced Drawings 1 and 2 indicates that the majority of outliers fit this category.

For presentational purposes the trend lines contained in the following Trend Analysis Drawings were produced using an exponential curve format. The resulting exponential trend lines accurately represent the decline of contaminant concentrations from December 1983 to March 2011.

Drawing 1
VOC Trend Analysis - G118S



Drawing 2
VOC Trend Analysis - G127

